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THE SURGICAL TREATMENT OF COMPLICATED VAGINAL DELIVERY.[1]

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It is the aim of surgery to prevent hemorrhage, infection, and shock, while relieving the patient of the essential cause of his disease or disability. It seems to me not unreasonable that in obstetric operations the same principles of treatment should apply.

Uterine inertia from general or local fatigue is recognized as the most frequent cause of postpartum hemorrhage. During labor bleeding may arise from accidental separation of the placenta, whether previa or not, or from laceration of some portion of the genital tract. To prevent hemorrhage from uterine inertia the prompt delivery of patients is clearly indicated. The stimulation of the patient's nervous energies, and especially the nervous supply of the uterine muscle, is equally important. In our experience strychnine is best adapted for this, given by mouth or hypodermically during labor, and administered hypodermically so soon as the uterus is empty. Ergot during labor has been shown to be most dangerous and should be exclusively reserved for the empty uterus. Compression and massage of the uterus are less valuable than strychnine and ergot, as they may tend to produce fatigue of the uterine muscle. The general care of the patient during labor, to secure as much rest as possible, to maintain nutrition in protracted labor, and to remedy mechanical difficulties, is recognized as important. Proper anesthesia by ether distinctly lessens the danger of hemorrhage, as it relieves the patient of pain, whose depressing effects may reach the degree of shock.

While the methods described may be sufficient to secure good uterine contraction immediately after labor, the element of uncertainty and possible late relaxation must always give the obstetrician great anxiety. Secondary relaxation of the womb not only produces acute anemia, but greatly favors infection. The accumulation of a large clot within the uterus produces pain, followed after its expulsion by relaxation and bleeding. A method which would prevent this and at the same time prove an additional guard against sepsis should give good results. After some experiences in hemorrhage following the accumulation of uterine clots after labor we have adopted the following procedure, in cases in which we fear secondary relaxation and bleeding: So soon as the uterus is empty it is irrigated by hot lysol, 1 per cent, and packed with 10-per-cent iodoform gauze introduced to the fundus, the womb being steadied by an assistant, who holds it in anteversion. For this purpose we have prepared gauze strips, three yards long and four inches wide, sterilized, and furnished in sealed and sterile jars. If assistants are abundant we

[1]Read before the Obstetrical and Gynecological Society of Washington, D. C., Feb. 5, 1909.

draw down both lips of the cervix with tenaculum forceps, protecting the gauze from contact with the vulva, by placing sterile gauze about the vulva and inserting the packing under the guidance of sight. If circumstances are not favorable for this manipulation, the fingers of the left hand may be introduced into the vagina beneath the cervix, the gauze passed along the hand into the uterus, and the packing rendered complete by using the fingers as a packer, after the fundus has been tamponed with the forceps. Reference to private case-books shows that in 141 cases gauze packing was introduced in 63—44 per cent. In but one case was the method unsatisfactory. This patient had three induced labors, one of them occurring in very hot weather. After a tedious labor delivery was effected by forceps, and packing was used. In spite of stimulation and manual compression, partial relaxation occurred and a clot accumulated at the fundus, between the fundus and the gauze. This occasioned no complications and the patient's pulse remained good. The clot made its presence known only when the gauze was removed. There has been no infection in these cases.

In most of the cases the patient had been delivered under ether and was partially, at least, anesthetized when the packing was done. In some cases, however, no anesthesia had been employed.

During the past year hospital case-books show 50 cases in which packing was employed, without complications and with good results. We have pursued this practice for fifteen years, in hospital and in private practice, and in out-patient hospital practice among the poor. We have been unable so far to trace in any case infection from this cause.

The gauze is removed in these cases, as nearly as possible, thirty-six hours after its insertion. The uterus is then thoroughly irrigated by one gallon of hot lysol, 1 per cent.

In addition to gauze packing, in all hospital cases, a nurse is stationed with the patient after delivery, keeping her hand upon the uterus until the patient is entirely conscious and has fully reacted from delivery. Should relaxation threaten, massage and compression may be employed. I follow the same precautions in private cases, where an assistant usually remains with complicated cases for some hours after delivery. Since adopting this method I have had no case in private of postpartum hemorrhage, and no case of relaxation sufficiently pronounced to oblige me to remove the gauze and repack the uterus. While my statistics do not cover the fifteen years during which this method has been employed, a sufficient number of cases have been quoted to indicate the value of the method. I prefer it to the introduction of ice or vinegar to check or prevent hemorrhage. In one desperate case of accidental separation of the placenta I hastily removed the fetus and its appendages, and introduced the hand, closing the fist, compressing the aorta at the pelvic brim, until intravenous transfusion could be done, when the uterus was packed successfully.

To prevent infection during complicated vaginal delivery, all agree that the operator should practice aseptic and antiseptic surgery. Our methods as applied to hands, instruments, dressings, and the external skin and vulva of the patient vary only in minor details. Admitting the presence of germs in the lower portion of the vagina, the question has been raised whether vigorous disinfection should be practiced in the vaginal canal before delivery. I have abandoned this, believing that scrubbing with tincture of green soap, simple douching, douching with bichloride and again with sterile water, so wound the epithelia of the vagina as to further the entrance of septic germs. In my experience gentle irrigation with warm lysol, one per cent, is sufficient. The thorough emptying of the bladder and the disinfection of the orifice of the urethra, irrigation of the rectum with salt solution, and thorough disinfection of the anus are indicated.

To efficiently maintain asepsis during vaginal delivery in complicated cases, a

technique as thorough as that employed for abdominal section is necessary. The patient must be placed in a position of advantage for the operator. A table may be employed where the patient is not so heavy as to make her transfer a matter of great difficulty. Such may be anticipated by having her use a narrow, firm bed during labor, which may be raised upon wooden blocks, previously made, at the time of confinement. The operator must carry out aseptic technique in instruments, gloves, and gowns, and cleansing of the region of the vulva and anus, including the trimming or shaving of the hair, should be thoroughly done. We have used to great advantage what is termed at the Maternity a "forceps sheet," which consists of two legs amply large enough to cover both lower extremities, and a sheet large enough to cover completely the abdomen. This is made in one piece, sterilized and folded in a sterile packet. It is useless to place individual towels about the patient, as they invariably become dislodged during delivery. Sterile towels or sheets may be placed beneath the patient upon a rubber pad. The patient's limbs may be kept in position by a sheet sling, unless assistants are abundant.

A most important guard against infection is the adequate closure of lacerations. Some years ago we had occasion in controlling hemorrhage from a torn cervix to insert sutures at the upper end of the cervical tear, which proved most efficient ligatures. These torn surfaces united without difficulty, and it seemed reasonable to us to conclude that if a tear severe enough to cause hemorrhage healed perfectly after suture, a considerable tear without hemorrhage would also unite after suture. In recent private case-books we find a record of 56 cases in which the cervix was stitched immediately after delivery, with no infection following, and with good results. During the last year at the Maternity the cervix was stitched in 15 cases with similarly good results. Our staff have employed this method in all cases in and out of hospital for several years, without infection following, with perfect union in 80 per cent of cases, partial union in 10 per cent, and no union in 10 per cent.

To accomplish this, after the uterus has been irrigated and packed with gauze, as described, both lips are drawn down by tenaculum forceps, sterile gauze is packed about the vaginal walls, as a dentist places in the mouth of a patient dry, sterile material about a tooth which he is to fill. The cervix is drawn strongly to one side, exposing the tear in the opposite side. No. 2 chromicized catgut in a fully curved needle is inserted into the highest point of the cervical tear, avoiding the mucous membrane lining the cervix. Each tear is stitched in this manner through two-thirds of its extent. The lower third may be left to heal without suture.

The objections urged against this method have been the occurrence of infection through retained lochia, the danger of inaccurate closure, and the fact that it is an unnecessary manipulation. In our experience no ground for these objections has been observed. Admitting a considerable percentage of failures, the results have been sufficiently good to justify the effort.

About the immediate closure of lacerations of the posterior segment of the pelvic floor there can be little difference of opinion. We desire to emphasize the necessity for closing the pelvic floor *first*, giving especial attention to the highest point in the pelvic tear. In severe cases lacerations may extend to the vaginal junction of the cervix, and stitches deeply placed may include the torn tissues about the uterosacral ligaments, and by drawing the cervix backward prevent retroversion. When the pelvic floor has been efficiently closed with chromicized catgut, the tissues about the sphincter of the bowel, in extensive lacerations, are next in importance. These should be brought together with fine chromicized catgut, the stitches being completely buried. The operator may then, should the lacerations be complete, close the rectovaginal septum with buried chromicized catgut.

The closure of the perineum with silkworm-gut stitches gives the operator opportunity to fit the torn parts together, to secure the best possible result. The mistake must not be made of drawing the vagina downward, thus tending to drag the cervix forward. It is well not to close the lower half inch of the pelvic floor until the sphincter and the perineum have been closed. The relations of the parts will be better seen and this mistake avoided.

The final stitches may be silkworm-gut or catgut, as the adjustment of the parts requires. After suture is complete the vagina should be tamponed lightly with bichloride gauze, which is left undisturbed for thirty-six hours, when this and the gauze packing in the uterus are removed. With the removal of the gauze the genital tract is thoroughly irrigated with warm lysol, 1 per cent; no other douches are given during the puerperal period.

Where the condition of the patient does not justify immediate suture, we operate from twenty-four to thirty-six hours after labor. We have seldom had to wait so long as this, but the results have been good. We have had no experience with the method of waiting for seven days after delivery before repairing lacerations.

A most efficient method of preventing the development of infection is the maintenance of the uterus in a condition of tonic contraction. This we have accomplished by giving strychnine and ergot immediately after delivery, hypodermically, so that the patient receives in all one-fifteenth grain of strychnine and from two to four syringefuls of aseptic ergot, during the third stage and immediately following labor. When she has completely reacted, strychnine and ergot are given by mouth for a week or ten days after labor.

The anterior segment of the pelvic floor must be fully inspected and lacerations closed with fine chromicized catgut. These are found most often on either side of the urethra, and occasionally in the median line above. They occasion free hemorrhage and often result in relaxation of the anterior vaginal wall and prolapse of the urethra.

The prevention of shock is best accomplished by prompt operation, anticipating exhaustion. Complete surgical anesthesia prevents shock in difficult deliveries. Partial anesthesia is often dangerous and may be accompanied by the development of threatening shock. As we control hemorrhage and prevent infection, so we lessen the risk of shock. The closure of lacerations may be usually accomplished without appreciable delay and without increasing the danger of shock. Delay of twenty-four to thirty-six hours is proper if shock is feared.

In giving stimuli to patients after obstetrical operations, the hypodermic method should be employed. Absorption from the stomach is too slow, or the patient is too often nauseated to trust to this. The use of salt solution is valuable, but the mistake must not be made of introducing too large a quantity. If there is a tendency to a weak heart, this may so increase the labor of the heart as to favor permanent dilatation. I have noticed in patients treated in the manner described that the usual period of heavy sleep following labor is often absent. This has never been a disadvantage, as sleep comes to these patients later in a refreshing manner. When a patient has fully reacted from an obstetrical operation, and suffers intense pain, she should have morphine promptly.

It must be distinctly remembered that it is the paramount duty of the obstetrician to use every means to secure spontaneous expulsion of the fetus without operation, and with the least possible number of vaginal examinations. Interference should only be undertaken for definite indications. When, however, mother and child require help, it should be given as thoroughly and as safely as possible.

SURGERY OF THE STOMACH.[1]

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To-day the chief problems of surgery lie in a region which may be covered by the palm of the hand placed on the epigastrium. Here we find closely grouped organs of the first importance in digestion, and these are subject to a variety of diseases, functional and organic, which tax our diagnostic powers and our therapeutic resources to the utmost. The chief offenders of the lower abdomen, the appendix and the Fallopian tubes, are relatively remote from sources of confusion, their pathology chiefly that of inflammation, their symptomatology fairly definite, their position more accessible, and their functions being less essential, treatment was simplified by the simple and easy expedient of removal of the offending member in most cases.

Following the elucidation of these problems, the gall-bladder, that other chief focus of intraperitoneal infection, was energetically attacked, and the surgery of the biliary apparatus to-day is resting fairly quietly on well-established principles and methods of procedure.

Next the search-light was turned on the stomach and duodenum, and more recently the pancreas has been dragged forth from its modest retroperitoneal retirement and subjected to scrutiny. The stomach and first part of the duodenum, which must be considered with it from a functional and pathological standpoint, afforded the surgeon new and unusual difficulties, and he is still engaged in masticating this *pièce de résistance.*

I am asked to discuss "modern surgery of the stomach." As a matter of fact all surgery of the stomach is modern. Its beginnings do not carry us back thirty years, and the first tentative and hesitating procedures were carried out only in the presence of great emergencies. Only in the last ten or fifteen years has there been anything like a general movement to extend the therapeutic limits of the scalpel in the various ailments to which the stomach is subject.

For many years it has been well known that the chief organic diseases of the stomach are ulcer and cancer, and the earliest surgery of the stomach was directed toward these conditions. In 1880 von Mikulicz first sutured a perforated gastric ulcer, but his patient died. The following year Rydygier successfully excised an ulcer, and Wölfler performed the first gastroenterostomy for the relief of pyloric stenosis.

These operations and their subsequent amplification and improvement have been called forth by the common knowledge that in these anatomicopathological alterations of the stomach expectant methods and all the assistance of drugs and hygiene fail to work a cure. Autopsies on the living have taught us much concerning the pathology of these persistent affections of the stomach and thrown light upon the treatment.

Of all the diseases of the stomach ulcer is the most important. It is not so frequent perhaps as the slight functional disturbances from which few escape, but it is vastly more serious. It is not so uniformly deadly as cancer, but it is vastly more common, and moreover in a large percentage of cases is credited with being the starting-point of the malignant change. Graham, in 145 cases of gastric carcinoma in the Mayo clinic, obtained an antecedent history indicative of ulcer in 60 per cent.

That gastric ulcer is a more common affection than the clinician suspects is not difficult to prove. As long ago as 1885 Welch in his masterly article in Pepper's System showed that approximately 5 per cent of mankind suffered at some time from this condition, as shown by the presence of open or cicatrized ulcers found at autopsy. Could we venture to suggest

[1]Read before the Northwestern Medical Society, Philadelphia, April 5, 1909.

that some ulcers leave no scar apparent to the pathologist's eye?

Ulcers in the first part of the duodenum, which form, in the Mayos' experience, 40 per cent of all ulcers of the stomach and duodenum taken together, should be considered clinically in this connection. Doubtless many duodenal ulcers have already been counted in the statistics of gastric ulcer owing to their intimate relation to the pyloric ring, but certainly some duodenal ulcers were not so included, and if we may add these two groups to the already stated percentage it can hardly fail to swell materially the estimate. But even adhering to the original figure of Welch, can we say that of every twenty individuals we can find one in whom at some time ulcer of the stomach or first part of the duodenum has been diagnosticated?

It is apparent that our average will fall far short of this. Evidently then the disease gives no symptoms in many cases or they fail of recognition. It is repugnant to our ideas of an ulcerative process sufficient to give macroscopic evidence of its presence, even long after healing, to suppose that it can exist without symptoms, and, moreover, in the presence of such a multitude of cases of "indigestion" in which no definite idea of the pathological basis is held, it would seem to be going rather far afield to ascribe these symptoms to undiscoverable causes and leave ulcer the symptomless wonder of the clinician.

It is plain that the symptomatology of this condition must be enlarged, that we must not hold a diagnosis contingent upon such conditions as pain of a certain type, occurring at a certain time, with nausea and vomiting, hematemesis, and melena. Osler says: "For months and years the patient has had dyspepsia, and the ulcer may not have been suspected until the occurrence of a sudden hemorrhage." The conviction that these dyspeptic symptoms should be correctly diagnosticated has been growing until we find a man of great experience in this disease, Mr. Moynihan of Leeds, who says: "It is almost as reasonable to wait for hemorrhage before venturing to diagnose a duodenal ulcer as to include a ruptured perineum among the signs of pregnancy." And what is true of duodenal ulcer holds with equal force in ulcers of the stomach, though it must be said that in gastric ulcer hematemesis is relatively more frequent than in duodenal ulcer, just as melena is more frequent in the latter condition.

It should not be a cause for discouragement that we cannot as yet carve out a sufficiently definite symptom-complex to enable us to recognize with certainty ulcer in its early and so-called latent stage, but rather an incentive to greater effort. It is necessary to keep ever before our minds that ulcer is vastly more frequent than our diagnoses would indicate; that we must therefore be treating many cases in a haphazard manner for dyspepsia which are really suffering from this condition, and by so doing permitting a certain percentage to go on to perforation, hemorrhage, or the callous stage, which is so resistant to palliative treatment and inflicts so much misery upon the victim. These are considerations which are of more interest from a medical than from the strictly surgical aspect and express my belief that ulcer in this situation, as elsewhere, is quite amenable to the ordinary principles of treatment by rest and protection.

The fact remains that those cases which come into prominence at the present time with a diagnosis made on the recognized principles are aggravated forms and present a very different prognosis from early ulcer.

Greenough and Joslin's excellent statistics concerning 187 cases of this condition treated by medical means in the Massachusetts General Hospital give an immediate mortality of 8 per cent, while 80 per cent were discharged as cured or relieved. After an average period of five years, of 114 patients who could be traced it was found that just half had relapsed and 15 additional cases had died of gastric disease, making a total of 20 per cent of deaths within the five years from the disease, certainly not a reassuring prognosis for those

patients upon whom a diagnosis of ulcer is made by present criteria. Bulstrode's analysis of 500 cases admitted to the London Hospital for gastric ulcer between 1897 and 1902 showed 18 per cent immediate mortality, of which 10 per cent were from other causes. He estimated recurrences after "medical cures" as at least 42 per cent.

The ulcer of indefinite and minor symptoms is by no means free from danger, as it is not so common for a perforation or severe hemorrhage to drop "from the blue," but I wish especially at this time to emphasize the gravity of all cases which come within our clinical ken.

If we *will* shut our eyes to the numerous mild and early cases we must be willing to act energetically when a percentage of these cases, whether by reason of the severity of the process, the poor resistance of the tissues, or by neglect of treatment, enter the easily recognizable and especially dangerous stage. In this stage the estimates of mortality range from 10 per cent by Lebert to 50 per cent by Brinton in the case of gastric ulcer, while that of duodenal ulcer, being a more dangerous condition by reason of the more delicate structure and unprotected situation of its wall, is somewhat higher. Statistics in this connection as elsewhere are apt to be misleading, but it is plain that a diagnosable ulcer is a condition in which one should not temporize, but rather respond with the best means at our disposal. The indication is rest for the part, and not only rest, but a long rest. This factor of time is what removes most of these cases from the sphere of the medical man to that of the surgeon. It has been abundantly proved that it is impossible to provide rest by medical means for a sufficient time to permit a cure in the majority of cases.

Gastric drainage is the solution, and the credit for suggesting the principle belongs to Doyen, who proposed it in 1893. Since then its efficiency has been amply demonstrated, and eminent surgeons are a unit on the remarkable results obtained in this way. Kocher, a man of the keenest scientific habit of mind and conservatism of judgment, voices the general sentiment when he says "the majority of practitioners do not sufficiently realize what brilliant results are to be obtained by operative means in chronic affections of the stomach commonly known as gastric catarrh."

"Not only can the numerous dangers of ulcerating affections of the stomach, such as hemorrhage, perforation, transition into cancer, be prevented, but the disease and its results may be so rapidly and certainly cured that the medical treatment of obstinate cases must be put in the background."

"The pain in the stomach disappears immediately after the operation. This is the invariable rule. The patient does not require to pay any further attention to the nature of his food."

"The vomiting disappears."

"The bowels become regular."

"Repeated investigation of the gastric contents shows that there is a progressive improvement in the process of digestion; hyperacidity diminishes; if too little acid is present, it becomes increased."

This sounds too good to be true, but it has been repeatedly observed. What is the operative mortality of the simple procedure of gastroenterostomy required to work these wonders? In the best hands from three to less than one per cent, and constantly diminishing. Compare this with the 8 per cent immediate mortality above quoted and the additional 12 per cent to be added in the next five years; and throw into the balance the large percentage of recurrences under medical treatment. Opposed to these figures are the results quoted by seven eminent surgeons in nearly 1000 cases of from 73 to 93 per cent of cures, and the remainder about equally divided between relieved and unimproved. Really these are wonderful results when one considers that only the most severe cases have been turned over to the surgeon.

Gastroenterostomy then is the treatment of choice in these cases of simple chronic persistent symptom-giving ulcers of the stomach and duodenum.

The complications of ulcer are various.

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A case tided over medically is not even assured of life, albeit with more or less severe dyspepsia. There is no security against perforation, which may occur in an acute form freely into the abdominal cavity, and in a subacute form where the slowness of the process has given time for perigastric adhesions to limit more or less the results of the perforation. In this case we may find adhesions, subdiaphragmatic abscess, or localized collections of pus elsewhere in the abdomen. Chronic perforation is the term applied to that condition in which extensive perigastric inflammation has provided the ulcer with a new bed without the stomach by the time the serosa is penetrated, so that dissemination of infection within the abdomen is prevented. Slow sepsis, distortion of the stomach, and hemorrhage from an eroded artery are here the dangers.

The acute form requires instant diagnosis and prompt surgical intervention. The ulcer must be closed and appropriate drainage instituted, while if the patient's condition warrants the procedure, and it usually does, I am accustomed to do a gastroenterostomy to promote healing and provide against later complications from the same source.

In the subacute and chronic forms of perforation the time allowed for action is increased, but the indication for surgery is just as evident.

The danger of hemorrhage is ever associated with the presence of an open ulcer. It may be slight capillary oozing or more free bleeding from venous or arterial trunks. Erosion of a vessel in the wall of an old indurated ulcer is apt to be fatal on account of the fact that the vessel walls are held as by a vise, preventing collapse or retraction and clot formation. I have recently observed a fatal case of this sort from erosion of the coronary artery.

Chronic recurring hemorrhages, whether occult or macroscopic, are an absolute indication for operation.

The very processes of spontaneous cure bring with them their special dangers. Cicatrization of an ulcer at the pylorus is a not infrequent cause of stenosis with subsequent dilatation. Occasionally tetany develops in cases of marked gastrectasis. These conditions are readily relieved by a gastroenteroanastomosis and afford an example of the most brilliant cures we have the power to bestow.

If the ulcer be not at the pylorus, or if it has given rise to perigastric adhesions, distortion of the stomach may follow, one of the most typical forms being the familiar hour-glass stomach.

The method of procedure in these cases will be governed by the anatomical conditions, but in general consists of release of embarrassing adhesions and provision for drainage of insufficiently drained pouches of the stomach. Occasionally it may be desirable to resect the diseased area and reunite. In a case which exhibits only a moderate degree of contraction with a relatively normal wall, a simple gastroplasty might suffice. An indurated ulcer in a favorable site should be excised and when at the pylorus a pylorectomy done. This line of treatment promises more in the shape of a permanent cure in the way of subsequent pain, dyspeptic symptoms, and so forth, of which some of these patients complain, and against the development of cancer.

Where there is any doubt as to the provision of proper drainage for the proximal pouch by this method, as is usually the case, a gastrogastrostomy uniting the two pouches should be done, and is best supplemented by a gastroenterostomy. Resection as an operation of higher mortality should be reserved for those cases in which the character of the gastric induration excites suspicion of carcinoma.

Definite gastric diverticula are rare and due in most instances to the traction of perigastric adhesions aided by intragastric pressure. Excision has been successfully done in two cases. These cases both presented a firm, painful tumor in the epigastrium adherent to the anterior abdominal wall, and gave histories indicative of chronic ulceration. Not enough cases have as yet been collected to generalize on the question of treatment. Doubtless in sim-

pler cases a drainage operation will be found sufficient after release of adhesions.

In dealing with uncomplicated ulcer where it is desirable simply to secure drainage, a gastroenterostomy is satisfactory and the most generally applicable procedure. The posterior no-loop or very short method, uniting the most dependent portion of the stomach with the jejunum at its origin, has proved the best in our hands as in those of most other surgeons. I have not seen a case of vicious circle follow one of these operations since using this method.

In regard to the direction of the incision in the stomach, we may take counsel of function or of anatomical detail. I have usually followed the method of Petersen and made the opening inclined slightly to the right from above downward, suturing the proximal portion of the jejunum to the upper angle. This creates a condition which more nearly approaches the normal peristaltic direction. Of late, however, I have also made the opening incline to the patient's left, as advised by Mayo, to permit a more normal situation of the jejunum, with equally good results.

In case extensive disease of the posterior wall, or adhesions or other abnormality, prevent a posterior anastomosis, an anterior gastroenterostomy may be done. In this case I think it wise to do an enteroenterostomy between the ascending and descending loops, as it adds little to the length or gravity of the operation and may ward off the dreaded vicious circle. Should such a complication arise after the enteroenterostomy, however, I believe it would then be proper to tie off the pylorus, and as a final step to ligate the afferent loop between the enteroenterostomy and the gastroenterostomy openings.

In cases of simple stenosis of the pylorus in which the tonus of the stomach has not been lost, and the pyloric tissues are still relatively delicate and healthy, a pyloroplasty after the method of Finney would most nearly restore the anatomical relations of the parts and is therefore to be preferred. In these cases also, however, a gastrojejunostomy seems to give as good a functional result and is associated with less risk. When the stomach wall is greatly distended or hypertrophied I am inclined to believe that drainage from the most dependent portion of the stomach will give better functional results than widening of the pylorus, owing in the first instance of the frequent failure of a thin-walled, dilated stomach to recover its tonus, and in the second instance to a hypertrophic insufficiency such as we often see in greatly hypertrophied bladders.

Old indurated ulcers are often hard to distinguish from malignant change, and indeed it is well known that malignancy is not infrequently implanted on the edge of such a process. In a doubtful case excision is advisable. As these ulcers are practically always in the pyloric portion of the stomach they lend themselves readily to the method of pylorectomy, which I shall mention in speaking of the treatment of cancer, and this complete resection is I believe preferable to local excision and gastrorrhaphy. A calloused ulcer in an unfavorable location for resection or where there is no danger of interfering with drainage may properly be excised.

Finally I advocate caution in the diet after operation. These patients are usually so much relieved that in their enthusiasm they neglect ordinary precautions. Thus they may defeat our purpose of procuring rest for the diseased area. The best results to be obtained by medical treatment are after and not before operation. I may say here that I have in several cases operated on a diagnosis of ulcer and found only perigastric adhesions, release of which has relieved the symptoms.

Of all organs the stomach is affected by cancer next in frequency to the uterus. Its pathology is well known, and in no disease has a clearer text-book picture been drawn than in this. The student with his general symptoms, local symptoms, local examination, and stomach contents well in hand can generally make an antemortem diagnosis. But nowhere do we see the need of a professor of practical medicine in our schools more than in connection with this same disease. The abdominal surgeon, to whom the professor looks for aid in these

cases, has cried out until he is hoarse that cachexia, hematemesis, mass, enlarged liver, and anacidity are symptoms not of cancer but of approaching dissolution, and still we talk of loss of weight, anemia, palpable tumors, and stomach contents, and the early symptoms are, if mentioned at all, dumped in with the late, and never a text-book to devote a paragraph to symptoms we may get while the disease is yet local and curable. It is clear that the reason why carcinoma in this situation is relatively so much more deadly than carcinoma of the lip or breast is simply that an early diagnosis by direct inspection and palpation cannot be made in cancer of the stomach without the formality of an operation. Hence the importance of acting on suspicion. There is but little use of the practitioner bothering his head about a diagnosis if he insists on certainty. By the time he is certain of his diagnosis, he is also certain of the prognosis. Therefore, I am inclined to say that a positive diagnosis is a disgrace to the physician in attendance providing he has been following the case for some weeks or months.

The latest device which has been invented to defer operation until it is too late is gastric analysis. Ewald, who has had a test meal named after him, and was the first to announce the absence of free hydrochloric acid in the gastric contents in this condition, states in italics in his book that "the presence of free hydrochloric acid in the stomach points with very great probability against the existence of carcinoma." What words can I use sufficiently strong to denounce this vicious falsehood? Righteous indignation should permit the use of a "shorter, uglier word" in speaking of a statement that takes from the unfortunate victim of the disease his one chance of cure, early recognition. I have had for some years routine examination of the stomach contents made in all cases of upper abdominal disease in which the stomach may be affected, including disease of the gall-bladder. At first hopeful of deriving assistance from this source, my disappointments were so frequent and great that I have come to place no reliance on the method. Still I have had them continued as a matter of record, and for the purpose of this article I had tabulated the last fifty examinations that were subsequently controlled by operation. The conclusions, not to weary you with figures, are these:

Anacidity is not infrequent in disease other than that of the stomach—*e.g.*, in 5 cases of 25 of disease of the gall-bladder.

In early carcinoma the acidity is but slightly altered.

In late inoperable carcinoma normal, or but slightly subnormal, acidity may occur.

Anacidity has almost invariably gone hand in hand with an extensive inoperable growth. Surely the clinician who wishes to be "writ as one who loves his fellow man" can have little use for this reaction in the diagnosis of cancer.

Lactic acid does not appear until acidity is greatly diminished or absent, therefore practical workers can lighten the boat of this weight.

The ferments are usually the last to disappear. Throw them overboard.

Blood, even occult blood, indicates ulceration. How often does a carcinoma ulcerate in its early stages?

The Oppler-Boas bacillus is extremely inconsistent and occurs only in the late stages of stasis and subacidity. It may be found in conditions of stasis and fermentation from benign causes and has no essential relation to malignant disease.

The *x*-ray gives no aid of any moment. We can determine with considerable accuracy the position, shape, size, and motor power of the stomach by other simple means. The *x*-ray cannot hope to do more, and moreover it often introduces sources of error through difficulties in interpretation. Where surgery will do most *x*-ray will do the least.

What have we left? We have a patient approaching or past middle life who either suddenly or on top of previous gastric disturbances finds that his digestion is getting rapidly worse. He has little inclination to eat; some articles of food, oftenest meat, but not invariably so, excite digust. He feels a certain languor and lack of vigor.

Eructations of gas, regurgitation, and a slight feeling of discomfort in the epigastrium or left hypochondrium may or may not be present. He begins to lose weight. In the absence of a very definite cause outside the stomach which could give rise to such symptoms, this man should have his stomach inspected directly. This will be at times needless. Again, other disease than carcinoma will be found, but in a large percentage of these cases we will be rewarded by finding early neoplasm curable by extirpation.

In rare cases of primary involvement of the orifices the diagnosis will be easy while the disease is still local. In most cases the diagnosis can as yet be only presumptive, and he who prefers to risk his patient's life by waiting rather than his reputation on an exploratory operation may be a successful but not a high-minded practitioner.

The ideal treatment for cancer is complete excision. In the vast majority of cases the disease arises in the pyloric or grinding portion of the stomach, its location thus agreeing with that of ulcer. By a fortunate arrangement of the lymphatics it does not tend to spread to the fundus. The glands of the lesser curvature are early involved, as in the adjacent gastrohepatic or gastrocolic omentum. By a wide excision, then, embracing these structures we hope to circumvent the disease in the early stages.

The method I employ is essentially the Billroth No. 2, and consists of removal of that part of the stomach lying between the first portion of the duodenum and the Mikulicz-Hartmann line, which is an imaginary perpendicular dropped from the cardiac orifice to the greater curvature. The cut ends of the stomach and duodenum are closed and a posterior gastroenterostomy done in the usual manner. Various modifications are occasionally necessitated by mechanical conditions. Thus where the chief operative difficulty is about the duodenum by reason of immobility or adhesions, I sometimes find it preferable to make the excision from above downward, first dividing the stomach instead of the duodenum as usually recommended. The amount of stomach which it seems wise to remove will govern the length of the loop and location of the gastroenterostomy opening. For this reason I do not believe it wise to do the anastomosis before the excision, and for the same reason I would prefer to perform the whole operation in one sitting, rather than do the gastroenterostomy first and wait for improvement before attempting resection. I reserve this last procedure for those cases in which an early stenosis of the pylorus has caused such a serious condition of starvation that I fear for the life of my patient.

It is sometimes wise to excise somewhat more of the stomach than has just been indicated. Such an operation has been distinguished by the term "subtotal gastrectomy."

A complete gastrectomy is rarely indicated. Such extensive invasion of the gastric wall as to make this operation requisite will usually be found to be accompanied by so many perigastric adhesions or by such obvious metastases as to render useless any but a palliative operation. On the 28th of last month I performed such an operation on a patient whose pyloric portion I had resected two years previously for carcinoma, which was then quite extensive and situated chiefly on the lesser curvature. For a year after this operation he had enjoyed excellent health. During the year following he had been going down-hill again, and the symptoms on this admission were definitely those of recurrence.

He had derived so much benefit from his previous operation that he was anxious for another attempt at cure. Accordingly, though without much hope of being able to accomplish anything, I made an exploration. The fundus of the stomach was extensively diseased and there were numerous adhesions. In the absence of demonstrable metastasis I determined to resect the remainder of the stomach, which was done. An attempt to unite the esophagus and jejunum by a Murphy button proved futile, owing to the retraction upward of the severed esophagus and consequent

torsion. I therefore anastomosed by suture. Fearing accident to this esophagojejunostomy, I supplemented the operation by a jejunostomy. So far the patient has done very well, but it is hardly to be expected that he will get a permanent cure.

The surgical treatment of advanced carcinoma in which it is hopeless to get beyond the growth is a very unsatisfactory part of surgery. The most frequent call for a palliative operation comes from pyloric stenosis with the distressing symptom of retention. A gastroenterostomy in such cases will often give marked temporary relief, and on the average has been shown to add about three months to the expectation of life.

In obstruction at the cardiac orifice death from starvation may be prevented by gastrostomy, for which there are several satisfactory operations. The methods of Senn, Witzel, and Koder are simple, effective, and yield probably equally good results, though my preference is indicated by the order. So long as a patient can swallow liquids this operation is not indicated.

A jejunostomy or duodenostomy may occasionally be advantageously done in cases of marked disease of the stomach wall rendering a gastrostomy difficult of performance. It will rarely be necessary or advisable, however, to employ these operations.

In all these palliative operations there is danger that the patient may become bedridden from the effect even of an exploration, and it is imperative to accomplish what is necessary with the least manipulation and in the shortest time possible. Then they should be gotten out of bed in four or five days.

In the future I hope we will have fewer explorations on cases with a positive diagnosis to see whether something can be done, a hope practically always illusory, and more explorations in suspicious cases while there is yet a chance of cure.

In the prosecution of this work it is necessary to have constantly in mind those minor and functional disorders of the stomach, than which nothing has done more to cast doubt upon gastric surgery. Ill-advised operations where there is no organic disease or mechanical difficulty can hardly be expected to result otherwise than in failure. It is true that we have a surgeon of recognized ability in New York advocating operation as a method of producing a profound effect upon the mind in cases of neurosis. But I am unwilling to lend surgery to the purpose of psychotherapy and regard such subjects as proper material for the internist with neurological propensities. Such cases may be hard to differentiate, but as I have recently pointed out they usually show other neurotic stigmata, often suffer from overwork or worry with obsessions of various kinds, and show a peculiar variability of symptoms, being remarkably susceptible to any change in treatment and hopeful suggestion. It is in these cases that we do find a use for our laboratory methods, since they are usually chronic cases in which we would expect to find marked departures from the normal motor and secretory functions in case of organic disease, but in the existing condition may find no abnormalities. Such cases are better untouched, or if explored under a misconception no operative procedure should be done on the normal appearing stomach. I believe it is proper in this class of cases to make ostentatious use of lavage, massage, electricity, or any agent likely to have a strong psychic effect.

Some of these cases need surgery, but not gastric surgery. It has been pointed out many times and should be known that a certain type of chronic appendicitis or of disease of the biliary apparatus or pancreas may give stomach symptoms so marked as to rule the picture. This is often due to the condition known as pylorospasm, which, if ever primary, is practically always secondary to some other lesion of the alimentary tract or its related structures. It consists in the reflex closure of the pyloric sphincter with consequent retention of gastric contents and motor and secretory disturbances. Stasis, fermentation, and perhaps dilatation may follow, and these symptoms of gastric indigestion may so distract attention from the true

excitant of the reflex that it easily remains undiscovered. Hence the importance of considering all the abdominal organs in dyspepsia. The treatment is accordingly that of the underlying pathology. Somewhat analogous to pylorospasm is the condition known as cardiospasm, in which there is more or less obstruction to the food by spastic contraction of the cardiac sphincter. Mild cases probably often pass unperceived. In more severe cases interference with nutrition may be serious. Thorough trial of bougies and dilators passed down the esophagus should first be made. If these measures fail to relieve much can be done by opening the stomach and divulsing the sphincter. A fair number of cures by this method are on record.

Gastroptosis is usually associated with general visceroptosis, and an operation on any one of the displaced viscera promises little. Simple gastroptosis doubtless does occur, and in such cases, provided symptoms are severe, one of the proposed operations, such as taking up the slack in the gastrohepatic omentum, may be done, but I may say that in general I am not inclined to recommend operation in cases of ptosis, and certainly not until the effect of a properly fitting abdominal supporter with general medical treatment is tried.

There is one condition not associated with demonstrable organic lesions of the stomach in which an operation may be serviceable and give truly brilliant results. This is the condition of gastrectasis or dilatation of the stomach in the presence of a patulous pylorus. My friend, Dr. Harvey Shoemaker, has often spoken to me of the excellent after-results obtained in several patients of this class referred by him to me for operation.

The precise cause of this atonic condition we do not know. It is often associated with low states of health and disease of other organs, particularly within the abdomen. It can be demonstrated experimentally that the majority of sympathetic fibers supplying the stomach are inhibitory and that stimulation causes relaxation and dilatation. This suggests a plausible etiology in reflex stimulation through the splanchnics from a more or less remote focus of disease, and this would correspond to our clinical findings of various abnormalities associated with this condition. Be that as it may, the stomach once distended beyond certain limits loses its power of elastic recoil, and to the original cause of dilatation there are soon added gastric stagnation, fermentation, and often a kinking at the pyloric outlet to interfere further with complete emptying of the organ. Thus dilatation becomes permanently fastened to the subject, and with the digestive disturbances and secondary debility of nerve and function may remain as the sole legacy of the original condition. In such cases medical treatment has been given a thorough trial before I am willing to operate. In fact, to use a phrase of William Mayo in another connection, such a case should be operated upon after it has had nine medical cures. The best operation to secure efficient drainage is a posterior gastroenterostomy done at the most dependent part of the stomach. A pyloroplasty is here of less value, since the motor function may have been so impaired as to be unable to empty the sagging pouch of the greater curvature against the slight force of gravity even in the presence of a wide and non-resisting outlet.

Gastroplication or the operation of reducing the size of the stomach by a series of pleats is, I believe, less likely to be successful, though in this opinion I do not speak from personal experience.

It has never fallen to my lot to see a fatal case of acute dilatation of the stomach such as are by no means uncommonly reported in the literature. After wondering at the strange immunity from the affection in a large service covering now many years and the varied operations mostly within the abdomen, I have come to the conclusion that the reason why we do not see them is by reason of the early and free use of the stomach-tube in all cases which show accumulation of fluid or gas in the stomach. I have seen cases with massed flatulence, eructations, more

or less vomiting, discomfort and distention of the upper abdomen, so wonderfully relieved by the use of the tube that I have speculated on the probable outcome, if the accumulated fluid and gas were not so removed. It is my firm belief that a percentage of these cases would have perished from so-called acute dilatation.

The treatment of this affection is then, in my opinion, early recognition of the onset and prevention by means of lavage. Elevation of the foot of the bed by preventing sagging downward of the stomach and the obstruction of the duodenum by the root of the mesentery as the intestines prolapse downward may be valuable adjuncts. This treatment would apply as well to those cases occurring as a primary affection or as a complication in other than operative conditions. There is a form of gastric dilatation encountered in infants as a result of stenosis of the pylorus. Whether this is due to a congenital abnormality, to hypertrophy, or to spasm is as yet not determined. The clinical features have suggested the term hyperemesis lactantium. It is recognizable by the vomiting which begins usually about the first week, by the obstinate constipation and progressive emaciation, and by the formation of epigastric tumor with visible peristalsis. Severity of symptoms of course varies with the degree of obstruction. It is advisable to try all medical means of relief possible without permitting the patient to become moribund from inanition. When it is evident that palliative measures are unsuccessful, operation promises much. Of 152 cases of operation reported there were 79 recoveries. Analysis of the results as well as our personal feeling would indicate a preference for some form of pyloroplasty as the best procedure.

It is impossible to cover this whole field in such a short space of time. I have, however, touched upon the most important subjects and confined myself strictly to practical aspects.

The chief point to emphasize, however, in all this subject still is that we must not allow the frequency of minor and functional disorders to divert our attention from the common occurrence and serious nature of ulcer and cancer. Ten years ago gastric surgery was far behind diagnosis. To-day it is just as far ahead, and we wait, perhaps impatiently, for the internist to come abreast.

THE TREATMENT, GENERAL AND LOCAL, OF "COLD IN THE HEAD."

BY CHARLES PREVOST GRAYSON, M.D., PHILADELPHIA,
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If he ever gives it any thought, it must seem strange to the layman that his physician is so seldom able either to abbreviate or to afford him any material relief during his attacks of "cold in the head." Although acute rhinitis may not in itself be anything more than one of the very minor ills of life, yet it is fully capable of becoming a decidedly major one if it be repeated with any great frequency, if its successive attacks increase—as they usually do—in severity and duration, and if it should gradually add to its ordinary clinical history one or more of its possible complications.

Does it ever occur to the physician himself that his treatment of this affection today is very slightly different and very slightly, if at all, more successful than was the treatment employed by his professional grandfathers? The quinine, opium, belladonna, and camphor that we find in the "rhinitis" and "coryza" tablets of our time were all of popular and almost routine employment many years before we and the tablet form of medication were born. In all probability his medical attendant advised Imperial Cæsar to have a hot drink of some kind and to go to bed whenever he began to sneeze and feel chilly, and some of the more recently discovered hieroglyphics of the earliest Egyptian dynasties seem to show that the hot foot-bath was then held in the same warm esteem that it is now. In spite of our accurate knowledge of the pathology of acute catarrhal rhinitis and our greatly increased understanding of its pathogenesis,

I doubt if its treatment by the profession at large is any more rational, any less empirical, in this twentieth century A. D. than it was in the eighth or tenth B. C.

We are now so thoroughly familiar with the anatomical and pathological relations of the nasal fossæ to their accessory sinuses, and of these latter to the anterior and middle cerebral fossæ, that we are able to affirm without any exaggeration that under favoring conditions the despised and insignificant coryza may be a potential median otitis, optic neuritis, orbital cellulitis, or even cerebral abscess. To the mind that is not fully abreast of contemporary nasal pathology, this may seem like "making a mountain of a mole-hill," but by those who are better informed, those who are familiar with the disastrous consequences that innumerable times have followed upon the neglect or improper treatment of simple coryzas, no such thought will be entertained.

I say *simple* coryzas advisedly, because, although acute rhinitis of infective type may be of greater menace in its intensity and in the extent of area likely to be involved, yet even the commonplace, non-microbic "cold in the head" due only to exposure and chilling is by no means incapable of compassing the same serious results.

I think we may take it as an axiom that all cases of acute rhinitis, of whatever origin and nature, have one predisposing factor in common—a *chronic* catarrhal rhinitis. Of course, this may vary greatly in degree and activity, but were it entirely absent I doubt if the nose would be vulnerable to the acute inflammation. The nasal mucous membrane of the new-born infant may not be actually catarrhal, as we understand that term, but for hereditary reasons it may be persistently hyperemic and of low resistance, and therefore easily susceptible to inflammatory disturbances.

To put a hypothetical case, if there were such a thing as a perfectly normal man, one with absolutely sound tissues and organs and perfectly balanced vasomotor nerve centers, does it not seem easily credible that an exposure sufficient to produce even severe chilling would be followed by no more than a transient congestion of the internal structures with a coincident rise of temperature, and that this would continue only so long as would enable the vascular inhibitory mechanism to reassert its control and dissipate any gathering trouble? In the physically degenerate man of our acquaintance, however, there are so many spots of enfeebled resistance, so many of actual, though perhaps more or less latent, disease, that a severe chill is almost certain to be followed by effects so serious that it may require a tedious struggle on the part of crippled nature to overcome and efface them, even though she have the benefit of skilled medical assistance.

Finally, it is my belief that in all of those who suffer from frequently recurring coryzas, there is back of the predisposing chronic rhinitis an equally chronic predisposing intestinal toxemia. I cannot recall a single instance of this malady in my own practice in which this fundamental factor has not been present in greater or less degree. In the adult it is usually conspicuously evident, and even in the child that has reached years of dietetic indiscretion its discovery rarely needs prolonged search.

I do not doubt that this has seemed a very long prelude to the portion of this article that is to be of practical value, but the thereaputics of any disease can scarely be regarded as rational and coherent unless it be shown that they are based upon definite conceptions of its etiology and pathology.

To summarize, therefore, what I have already said at some length, an acute coryza represents the results of a triple pathogenetic alliance—a chronic rhinitis, a chronic intestinal toxemia, and an exposure to an accidental stress of some kind, not necessarily thermometric or hygrometric, for just as effective as these are others of an emotional, dietetic, dynamic, or microbic nature. It is, then, perfectly evident that although in all cases the general principles of treatment will be the same, yet considerable discrimination in the matter of detail must be exercised in the individual case

because of the varying nature of the exciting cause.

For clinical purposes let us undertake the treatment of a case coming to us within the first twenty-four hours of its course. The paroxysms of sneezing are frequent and vigorous, the nasal discharge is thin, acrid, and abundant, the nose greatly obstructed by the engorged turbinates, and there is, perhaps, some dull frontal headache. It shows a lack of comprehension of the nature of this disturbance to talk about an "abortive" treatment. There is nothing more than a merely clinical analogy between this affection and an acute gonococcic urethritis. The one is but secondary to and symptomatic of a general disturbance not amenable to "abortive" methods of treatment; the other is primarily and persistently local, and if promptly attacked may, perhaps, be promptly arrested. The really rational treatment for an acute rhinitis, therefore, will be one that is directly and vigorously addressed to the predisposing systemic condition. The theory of it is so simple and is based upon such ordinary common sense that naturally it will not appeal to any but the more intelligent of our patients. No combative alliance can be established between it and that obese type of imbecile who tells you that he *must* have his meat and potatoes, his bacon and eggs and coffee three times each day in order "to keep up his strength!" Argument would be wasted on anything like that. With the others, however, we may many times bring about the stage of decline within a few hours by a therapeutic programme that will begin with a cathartic dose of one of the natural saline waters. There is no occasion for our prescribing Apenta, Hunyadi, or any of the imported waters when our own native "Pluto" is fully as efficient. One-third of a Pluto "split" in a glass of ordinary drinking-water is usually quite sufficiently active. Whether we can enforce the rest of the treatment depends upon how anxious our patient is to get well, and how much he will do to help himself. He should fast for twenty-four hours, and several times during this period he should for fifteen or twenty minutes indulge in the most active exercise of which he is safely capable. With appropriate modifications this advice applies not only theoretically but practically to men, women, and children, and if in this way the heart's action is quickened and invigorated and the skin, bowels, and kidneys urged to active eliminative work, the engorgement of the nasal membrane will rapidly subside and its effects be quickly obliterated. If drugs must be used to fortify the patient's confidence, let them be only such as will harmonize with the foregoing therapeutic plan —the salicylates or their synthetic substitutes, the saline laxatives on rising and retiring, a few minims of aromatic spirit of ammonia or tincture of nux vomica. These may not help very greatly, but at least they will not delay the relief afforded by the hygienic measures; and from this point of view alone they are infinitely to be preferred to the combinations of opium, belladonna, aconite, and acetanilide found in most of the "rhinitis" and "coryza" tablets manufactured for self-dosage. I am quite aware that it is not more than one man or woman in twenty who can be induced to practice in full the fasting and exercise that I advocate, but perhaps the other nineteen, weak in faith and energy, may at least be kept from eating more or exercising less than usual, and so be neutral in the fight, even if they will not help. I must trust to the common sense of the reader to understand that I do not insist upon active exercise by those for whom, owing to age or some organic unsoundness, it would be unsuitable. For these latter the cabinet bath or some other non-depressant method of promoting diaphoresis is to be preferred, and, of course, as is true of all other remedial measures, the earlier in the attack it is used—*i.e.*, before any degree of serous infiltration of the nasal mucosa has occurred —the more prompt will be its effects. In other words, if we regard an acute rhinitis, whatever its exciting cause may be, as an awkward and misplaced eliminative effort on the part of Nature, it becomes our busi-

ness to convince that lady that we can do this work more rapidly and with less disturbance than she, and if we are successful in impressing her favorably with our cathartic overture, she will be quick to admit her error in choosing the nose as a waste-pipe and permit us to employ in its stead the normal emunctories of the skin, the bowels and the kidneys.

In conclusion, I have but a few words to say concerning local treatment. This can be no more than palliative and is merely supplementary to the systemic sanitation to which we treat the patient. Every rhinologist has his own ideas and his own technique in connection with intranasal treatment, and it is to be understood that my suggestions may be very greatly modified at times in order to adapt them the better to some special condition. It is to be remembered that the acutely hyperemic nose is always hypersensitive, and therefore, before making any applications to it or even spraying it with a cleansing solution, it is wise to reduce its oversensibility by a preliminary spray of a one- or two-per-cent solution of cocaine. Not more than what will amount to two or three drops of this should be used in each fossa, and within a half minute not only will the lower turbinates be less sensitive, but they will have shrunken sufficiently to permit inspection of the middle ones. If a small tuft of cotton on a light and slender applicator be now moistened with the two-per-cent cocaine solution, carried up to the middle turbinates, along their lower borders and into the recess of the middle meatus, we will in a few moments be enabled to reach and flush almost the entire nasal chamber with an alkaline antiseptic wash. This latter should be used gently but generously, and the patient directed to draw it back into the nasopharynx so that this cavity may also be cleansed. When this has been accomplished it only remains to cover the mucosa with a protective and soothing fluid or powder. A very agreeable and efficient powder is one composed of two parts of zinc stearate with menthol and one part of zinc stearate with balsam of Peru, and this may be dusted throughout the fossæ from one of the several varieties of nasal insufflators. Following this, a nebulizer containing the chloretone inhalant or the adrenalin inhalant (P., D. & Co.) may be used, these oils being not only protective and slightly anesthetic in themselves, but, by making the powder more adherent, prolong its stay in the nose.

TETANUS OF SHORT INCUBATION—RECOVERY.

BY E. MARSHALL HARVEY, M.D., MEDIA, PA.

The following case of tetanus is interesting from the fact that it had a short period of incubation, was treated with large doses of antitoxin, chloral hydrate, bromide of potassium, and ended in recovery:

The patient, Joseph C., aged thirty-nine, by occupation a road supervisor, was on October 21, 1908, while clipping a horse, kicked on the nose and forehead, causing an incised and lacerated wound. This wound began at the middle of the nose and extended upward to near the center of the forehead, and then curved outward over the right eye to the temporal ridge of the frontal bone. It extended down to the bone along its whole course, and bled profusely. After thoroughly cleaning with bichloride I sutured the wound with catgut sutures and applied a moist dressing.

Everything went along nicely until the evening of October 27, when he began to have some soreness in the muscles of the neck, jaw, and throat, but he did not come to consult me about it until the next morning, when he said that he thought he had taken cold in his neck and throat muscles. Not suspecting the true condition of affairs, I prescribed for him, telling him to come in again the next morning. But that same afternoon he sent for me, and when I saw him I at once realized the trouble. I took Dr. Fronfield up to see him that night, and

he agreed with me as to what we had to deal with. I ordered him to bed and began treatment. That night the jaws were firmly fixed.

I immediately opened up the wound and cauterized it with pure carbolic acid, also ordering for him twenty grains of chloral hydrate and forty of bromide of potassium, to be given every three hours. I also sent to the city for some antitoxin, and that evening gave him his first injection of 3000 units, and followed it with a smaller dose at midnight. The next day the same dose was repeated at 6 A.M., 12 o'clock noon, and at 8 o'clock in the evening.

On Sunday, November 1, he received only one dose of 1500 units at 12 o'clock noon. I started to give him that day one grain of carbolic acid every three hours. This same date (November 1), at 10.45 P.M., he had a spasm of the muscles of the throat and neck, and before he got relief he came very near choking to death. This spasm lasted about five minutes, and during the attack he was cyanosed and blood came from both his nose and mouth.

On November 3 he got very restless, and I gave him 1500 units of antitoxin.

On November 4 he was given 1500 units of antitoxin at 9.45 A.M.

On November 5 he was given 1500 units of antitoxin at 10 A.M.

At 5 A.M. on November 6 he had a second attack of spasm of the throat and neck muscles, which caused severe strangling and quite free bleeding from the mouth and nose. This lasted about the same time as the first attack. I ordered more antitoxin, and at 7.45 P.M. this same day gave him 1500 units.

On November 7, at 6.30 P.M., the dose of 1500 units was repeated, and again on November 8, at 7.30 P.M.

This was the last antitoxin that he used, making the total amount administered during the course of the disease 24,000 units. This was given in the muscles of the back, high up between the shoulders and on each side of the spine. It was also used around the seat of the wound.

During the course of treatment the patient was also given three grains of morphine sulphate, each dose being given in the evening, as it generally gave him a good night's rest.

The symptoms did not seem to improve until the 10th of November, when the general condition was better, but the stiffness of the muscles of the jaw remained the same. From this date the jaw muscles began to relax, and on November 16 the patient was able to say a few words for the first time. On October 4 he had apparently regained his normal condition, except as to a slight hoarseness of the voice, which he still has to this date (January 20).

The patient's temperature, after the third day of the disease, did not go above normal. His pulse-rate ran from normal to 119, which was reached on November 7, the eleventh day of the disease.

To assist in the elimination of the poison the patient was given hot packs once a day for one week, letting him remain in for forty-five minutes at a time; this resulted in free perspiration. These packs seemed to tire him much, and he objected to them.

We also tried to give him high bowel irrigation of normal salt solution, but not very successfully, as it was almost impossible to keep the tube in position after once getting it in place.

The kidneys did not show any pathological changes during the treatment.

The bowels were moved easily with the ordinary remedies.

There was one distressing symptom present, and that was the nasal obstruction, apparently caused by the congestion around the seat of the original wound. He had great difficulty in breathing through his nose at all times, and only by the application of menthol, camphor, and eucalyptol was he able to have any comfort at all. This condition also commenced to clear up when the general symptoms began to abate.

The patient complained at all times of great pain in the muscles of his neck and jaw. His swallowing was interfered with only at the times to which I have made reference, and he was able at all times to suck liquids through his teeth.

The points of interest in the case were, I think:

1. The short period of incubation, followed by recovery.

2. The large doses of all medication that he was able to stand without any symptoms of poisoning.

3. The relaxation of the trismus on three or four occasions while he was asleep. This occasional relaxation did not appear until the tenth day of the disease.

One night when he had fallen asleep, and the jaw muscles relaxed, his tongue protruded. Upon awaking the muscles contracted again, and the tongue was caught between his teeth; the nurse thought he was going to strangle before she could get him relieved. She used a spoon to pry open the teeth, and he was relieved at once. Blood came from his nose and mouth as in the other attacks. We thought that this was similar to the other attacks, and did not know differently until after he was able to talk, when he told us the cause of the trouble.

It was about six weeks before the patient was discharged as cured, but there still continues to be some hoarseness of speech.

THE CHOPPED MEAT DIET.

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The so-called exclusive proteid diet, meaning chopped meat, has again come to the front, in an article by Young in the *Clinical Journal* of November 4, 1908. The article is really an excellent one, especially in its advocacy of hot water, drunk in considerable quantity, but as regards the use of chopped meat as an exclusive diet there is something to be said on the other side.

First of all, chopped meat is not strictly exclusively proteid, as it can scarcely contain less than two and a half per cent of fat, and as it contains a small but qualitatively important amount of non-proteid nitrogenous matter, such as gelatin, some inosite, and extractives. While, as the author states, gouty patients are often injured by carbohydrates, there are many reasons for holding that the purins of meat and even a large proteid ration are the essential injurious factors. A half-pound of lean meat three times a day amounts to about 700 grammes, one-fifth of which is proteid; 140 grammes of proteid is excessive according to any standard, and is more than double the ideal ration established by Chittenden. In general, it is a good policy to stick to the A, B, C of things, and an excessive ration of nitrogenous matter must be considered as contraindicated in diseases of nitrogenous catabolism unless some very convincing proof to the contrary is brought forward.

Young continues: "Speaking generally, however, the diet should be reserved for chronic digestive disorders, such as chronic gastritis, chronic hyperchlorhydria, dilatation of the stomach, etc." Unfortunately it is difficult to understand just the significance of the "such as." One could scarcely select three names applied to diseased conditions which may apply to conditions of such diverse essential nature as these three. Moreover, it does not seem possible that any one can claim that any such diet as chopped meat, or, indeed, any other single foodstuff, should be followed for any length of time, so that the significance of the word *chronic* seems dubious. Nor does it seem that we should lay the stress on the word *gastric,* for while, as Young states, meat proteid is in the physiologic sense digested quite readily in the stomach, it seems a common-sense rule to spare the stomach and lay the burden as far as possible on the intestine, when the stomach is intrinsically weak.

Young summarizes his paper under four headings for the chopped meat:

"1. It contains a maximum of nourish-

ment with a minimum of weight and bulk." As the specific gravity of organic nutrients does not differ widely, we may disregard the word *bulk*. The only trouble with this statement is that it is not so. If we take the word nourishment to mean caloric energy available, lean meat furnishes only about half the nourishment of fat meat, less than half the nourishment of sugar, about half the nourishment of dried fruits, and about one-fifth the nourishment of butter or oil, weight for weight. If by nourishment is meant proteid alone, meats certainly rank high, containing about double the proteid of cereals, but only a trifle more than eggs and considerably less than cheese.

If we omit from the diet list the coarse, relatively innutritious vegetables, and count oranges, etc., as beverages—as, indeed, they usually are, since we generally either suck out or dip out with a spoon the juice—a full standard diet of about 2400 calories includes about 1000 grammes of solid food, meaning by solid food not water-free ingredients, but food as ordinarily eaten. A diet of 700 grammes of solid food, yielding somewhere about 750 or 800 calories, can scarcely be considered as concentrated. Relatively to the actual yield of heat and energy, so far from representing a maximum of energy with a minimum of weight, it is only about half as concentrated as an ordinary mixed diet with the qualification already made.

"2. The smallness of weight and bulk imposes but little strain on the motor power of the stomach, while the comminuted condition of the meat renders it easily accessible to the gastric juice." Obviously, a diet comprising only one-third of what an individual needs ought to impose a less strain on the stomach. But such a diet tends to constipation, to putrefaction in the intestine, and it involves a considerable strain on the catabolic functions and the emunctories.

"3. Being largely digested in the stomach, it gives temporary rest to the succeeding portions of the alimentary tract." If this be so, why is it advocated for cases in which we need to spare the stomach and in which nothing is said as to the condition of the succeeding portions? As a matter of fact, a meat diet does not spare the intestine any more than a water-free diet spares the kidneys or the skin. It would be almost as sensible to reduce the percentage of oxygen or the extent of respiration to spare the lungs. While it is true that coarse, relatively innutritious vegetables, especially if containing sharp particles, irritate the bowel, the mechanical work of the bowel is easier with a fairly bulky content, and the almost inevitable putrefaction in a mass of meat, which, by the way, is by no means so thoroughly digested by the stomach, especially a diseased stomach, as a high-school course in physiology might lead us to think, affords a considerable factor of irritation, not to mention the systemic results of saprophytic and metabolic decomposition.

"4. Indirectly it tends to arrest the formation of toxins . . . proteid putrefaction being discouraged by careful quantitative regulation . . . while acid fermentation is inhibited by the absence of carbohydrate food."

The first point has already been touched on. If Dr. Young can give approximately 700 grammes of meat a day and still discourage proteid putrefaction by regulating the amount, he can do better than most of us. As to acid fermentation, the extremes of lactic acid formation are found in certain cases of gastric dilatation, with catarrhal inflammation, when the patient has eaten too much meat. But acid fermentation does not produce anywhere near the harmful results of putrefaction; it inhibits putrefaction, and is often designedly aided by the administration of buttermilk or of milk plus pure cultures of lactic acid microörganisms. Moreover, fermentation of carbohydrates is usually easily controllable by dietetic restriction and choice, not elimination by digestants and internal antiseptics.

EDITORIAL.

THE EMPLOYMENT OF THE SALICYLATES IN RHEUMATISM.

As with quinine in malarial infection so with the salicylates in rheumatism failure in treatment will often ensue if the technique of their administration is faulty. There can be no doubt that in many instances the dose of the salicylates given in cases of acute articular rheumatism are entirely inadequate. Not infrequently adults receive not more than forty or fifty grains of salicylate of sodium in twenty-four hours for many days without material improvement and with the result that the stomach is considerably impaired in its function, when the use of a comparatively few doses much larger than these would have resulted in prompt recovery. Our English brethren understand this phase of the use of the salicylates better than we do, perhaps because they meet with the disease more frequently. It is our own custom to give from 100 to 150 grains of salicylate of strontium in each twenty-four hours for the first four or five days, administering simultaneously an equal or greater quantity of bicarbonate of sodium. With these the patient receives copious draughts of pure water to flush the kidneys and to dilute the medicine in the stomach. These doses seldom cause difficulty with the digestion, and should the cerebral symptoms become annoying they can be in large part controlled by the use of the bromides, care being taken, of course, that the bowels are kept freely moving without the patient being purged to such an extent as to weaken him.

In this connection we have read with much interest two papers contributed by Dr. Ralph Stockman, of Glasgow, and Dr. Lees, of London, to the Proceedings of the Royal Medical Society. Dr. Stockman, whose well-known researches upon the blood have given him an enviable place in English medicine, believes firmly in the power and specific action of the salicylates in acute articular rheumatism, and points out that some practitioners go so far as to base their clinical diagnosis upon the results obtained by this method of treatment. In some cases the action of the salicylates is most prompt and in others slow, while in still others they seem to fail, but in the latter instance, if the doses have been properly given, there is always a question as to the correctness of the diagnosis—in other words, as to whether the arthritis is due to the specific microörganism of Poynton and Payne or to some other microörganism. While Stockman admits that relapses of true articular rheumatism may occur while the patient is taking the salicylate, he nevertheless believes that persistent resistance to the salicylates is indicative of the presence of some other infection of the joints, and the test may be made the more positive by giving an additional dose of 40 grains over and above the quantity which the patient is already receiving.

Stockman points out that physicians, with much experience in the treatment of acute articular rheumatism, believe that in those cases in which the fibrous tissues are chiefly affected the results are less favorable than in those in which the joints are mainly involved. He thinks that the possible explanation of this lies in the fact that organisms lodged in the fibrous tissues are more protected from the action of the drug than those which are in the joints.

Why it is that certain cases of rheumatic pericarditis speedily yield to the salicylates while others are correspondingly resistant he does not know, unless it is that the type of infection varies. Of course, pericarditis due to the pneumococcus or the tubercle bacillus cannot be expected to yield to the salicylates. Stockman believes that large doses are essential and must be frequently repeated, partly because these small doses fail to act as specifics, because the drug is rapidly excreted, and, further, what remains is speedily being turned into salicyluric acid, which is valueless from a therapeutic stand-

point, Stockman having proved, by direct experiments some years ago, that salicyluric acid has no antirheumatic properties.

Stockman is forced to admit that so far no chemical or pharmacological explanation has been forthcoming of the specific effect of salicylic and benzoic acids in acute rheumatism, and this is more extraordinary in view of the fact that a number of nearly-related chemical compounds are utterly valueless.

Dr. Lees takes a very much more radical stand than that of Dr. Stockman. He states that the treatment of acute and subacute rheumatism, as advised in the text-books and as usually carried out in practice, is inadequate and unsatisfactory, and he evidently believes that he who employs small doses of the salicylates in rheumatism is on the high road to discouragement and therapeutic nihilism. Furthermore he believes that salicylate of sodium is much to be preferred to the more modern salicylate called "aspirin," and thinks that the latter can be as dangerous as the former in massive doses, if not more so. He also believes that some of the deleterious effects ensuing after massive doses in times past were due to impurities in the drug, and that the depression of the heart which has been thought to be produced by the salicylates is probably more due to the disease than to the remedy. Indeed, he asserts that he has never seen a case of subacute, or acute, rheumatism in a child or in an adult in which dilatation of the left ventricle did not exist.

Perhaps the most important part of Dr. Lees's article is that in which he insists upon a general recognition of the fact that acute articular rheumatism is a microbic toxemia, most virulent in early life, at which period it affects the joints slightly and the heart greatly, and yet in another sense varying in no way from the rheumatism of adults. He believes that in most instances where the salicylates fail to relieve arthritis the condition is not one of acute articular rheumatism but of some other form of infection, and he strongly advocates the view that sodium bicarbonate should be given constantly in twice the amount of the salicylate. He believes that sodium bicarbonate helps to neutralize the acid toxins which Walker and Ryffel found were produced by the diplococcus, and he quotes the investigation of Gaskell in which it was shown that dilute lactic acid is capable of causing dilatation of the heart. Bicarbonate of sodium is better than bicarbonate of potassium because the potassium salts in large doses are distinctly depressant owing to their base.

When these large doses of the salicylates, sometimes amounting to several hundred grains a day, are given to children they must be carefully watched for the development of drowsiness and acetone odor of the breath or disturbance of the respiration—in other words, for symptoms of diabetic coma with acetonuria.

The danger of developing these symptoms is greatly diminished, and in Lees's opinion, entirely prevented by careful relief of constipation and the use of bicarbonate of sodium in sufficient quantities to make the urine constantly alkaline. Should any of these symptoms of acid poisoning develop the salicylate will have to be omitted for a day or two, and the bicarbonate continued, even in such large doses as a drachm every hour. Often the dose of the drug need only be dropped out for a few hours, because the remedy is so rapidly eliminated.

Lees recommends for adults 150 grains daily; for a child of from seven to twelve from 10 to 100 grains daily; and for a child under seven from 5 to 50 grains daily, with twice the amount of sodium bicarbonate in each case. In some instances in which the disease is severe he even gives as much as 400 grains a day. In cases with choreic symptoms he believes that these large doses are particularly essential, and he quotes the case of a boy of fifteen with severe pericarditis, endocarditis, and a large, dilated heart who received 600 grains of the salicylate of sodium and 1200 grains of bicarbonate daily.

By means of these doses Lees claims that he gets rapid relief from pain and a quick subsidence of arthritis, rarity of relapse, and speedy convalescence. For rheumatic pericarditis he strongly recom-

mends the use of an ice-bag over the heart, warm bottles being applied to the lower extremities. He also thinks that the ice-bag applied over the precordium is advantageous in rheumatic endocarditis; and finally he concludes that if his methods were adopted many rheumatic children would be saved and that an enormous reduction in the prevalence of postrheumatic cardiac complications would take place.

We confess that we have not had the courage to go to the extreme advocated by Dr. Lees, but we think that there is much force in his argument. As Lees says, excessive timidity in dosage is more detrimental to the patient than cautious boldness.

THE VALUE OF THE OPHTHALMO-TUBERCULIN TEST.

Medical literature during the last two years has fairly teemed with the reports of the employment of this method of reaching a diagnosis of the presence of tubercular infection. As in many other instances, this method, which seemed to promise so much at its inception, is now generally recognized to possess several distinct limitations both as to accuracy and safety, and a sufficient number of cases are on record in which serious inflammation of the eye has taken place to make physicians a little cautious in its general employment. It is essential in studying any new method of diagnosis or treatment that a very large amount of material should be gathered together before a final judgment is passed upon the actual value of the plan. In addition it is important that this material should be properly analyzed, and finally it is no less essential that those who analyze it should be, by special training in clinical observation and in the study of statistics, qualified to present to their professional brethren conclusions which may be relied upon. For this reason we have read with much interest the conclusions which have been arrived at by Dr. Edward R. Baldwin, of Saranac Lake, which he has published in the *Journal of the American Medical Association* of February 20, 1909. He finds that the conjunctival tuberculin test, performed with weak solutions of a single instillation, is of some value for the purpose of confirming the presence of tuberculosis in its early stages, but that it is of little value in confirmation when the symptoms of tuberculosis are only suspicious, and of course it is in such cases that we most desire to find a reliable guide.

In regard to the influence which it produces in cases of healed tuberculosis, in distinction from those which have an early active process, Baldwin thinks that as yet we have not sufficient evidence to reach definite conclusions. It is quite possible that a considerable number of patients who have healed tubercular lesions will give a positive reaction, and so mislead the physician into thinking that some dangerous condition is present. Warning is given that the test be not repeated in the same eye since misleading and dangerous results may often occur, and even repetition of the test in the other eye does not appeal to Baldwin as being particularly advantageous.

In regard to the danger to the eye itself Baldwin thinks that this is not sufficiently great to forbid the employment of the test when other methods are inapplicable, as when fever is present, but the ophthalmic test should be restricted to adults because the cutaneous test has been found equally valuable for children and is certainly harmless; whereas the cutaneous test in adults is so frequently positive, when tuberculosis is not present, that it cannot be relied upon. We are glad to note that Baldwin states that in his opinion a hypodermic injection of tuberculin for diagnostic purposes should be restricted to those cases in which a focal reaction at the site of the disease is desired, and when the other tests result negatively. He believes that the conjunctival reaction, so far as prognosis is concerned, is unreliable and therefore of little value.

In this connection the views of Wolff-Eisner, one of the first to employ this method of determining the presence of tubercular infection, are of considerable value. He believes that both the subcutaneous and the cutaneous methods of using tuberculin for diagnosis are specific.

As they both demonstrate not only active but latent tuberculosis, their use is extremely limited for clinical diagnosis, and the positive conjunctival reaction shows only active tuberculosis. We do not think that the consensus of opinion is in accord with this last statement. So, too, Wolff-Eisner seems to differ from Baldwin in that he believes that a negative result of the ophthalmic test in those who are manifestly tuberculous justifies a bad prognosis. On the other hand, there can be no doubt that in far-advanced tuberculosis negative reactions frequently occur, and so it is true that persistent negative reactions may indicate that the patient has little vital resistance.

THE ACTION OF SALINE PURGATIVES.

It is generally considered by those who are interested in the special study of the physiological action of drugs that the various saline purgatives produce their effects in three ways: First, by preventing the absorption of fluid from the alimentary canal, thereby retaining liquid in the tube; secondly, if given in proper concentration they cause a pouring out of fluid into the intestine, thereby adding to the amount which has been swallowed; and thirdly, it is generally supposed that they stimulate peristalsis and so hurry along the contents of the intestine toward the rectum. These views have recently been placed in doubt as to their correctness by investigations which were carried out by MacCallum, who seemed to confirm the earlier studies of Aubert to the effect that these purgatives act directly upon the intestinal wall if they are given intravenously, and so the idea has been once more put forward that these purgatives produce their results almost solely by this influence. On the other hand, Meltzer and Auer, and also Frankl, have denied the accuracy of these observations and assert that the intravenous injection of sulphate of sodium, for example, fails to produce purgation but rather tends to cause constipation. Perhaps some of the differences in results are due to the character of the animal which was employed for the experiment, since it can hardly be supposed that purgatives would have the same effect upon the intestinal canal of herbivorous animals as they have upon the intestinal canal of carnivorous or omnivorous animals. Thus, it is well known that dogs are not purged by elaterium, which is one of the most active watery purges, when given to human beings, that we have.

More recently still Hertz, Cook, and Schlesinger have published in the Proceedings of the Royal Society of Medicine of London an investigation in which they seem to support the conclusions arrived at by MacCallum and controvert the generally accepted views which we have already stated. One of their methods of experimentation was to study the movements of the intestinal canal by means of the *x*-rays after the administration of large doses of bismuth, as much as two ounces of this substance being administered. In this method of experimentation, so far as purgatives are concerned, we think that there is much room for fallacy, since the influence of bismuth may not only directly antidote the purgative effects of a salt by reason of its somewhat astringent properties, but it may also seriously interfere with the physical effects which the purgative would otherwise exercise, particularly as the dose which they employed of the purgative was usually small, only a drachm of magnesium sulphate being given in half a pint of water. It is only fair to state, however, that in studying this question in a patient who had a fistula of the cecum they found that the bismuth salt traveled quite as rapidly as the purgative salt.

Hertz and his colaborers believe that some of the purgative salt is absorbed from the stomach and then acts through the blood, stimulating the neuromuscular mechanism of the colon. They attempted to gain additional light in the matter by analyzing the feces and the urine, after magnesium sulphate had been given, comparing these analyses with the results which they obtained by analysis before the drug was given. The results which they obtained

were rather remarkable, in that they found that the watery stool, passed after the use of a drachm of magnesium sulphate in half a pint of water, contained only a few grains more of the salt than the normal solid stool which had been passed earlier in the morning before the salt had been taken; but the next morning, when a normal solid stool was passed, it contained a larger proportion of magnesium sulphate than the liquid stool which followed the ingestion of the drug. They, therefore, argue that the presence of magnesium sulphate in the stool does not act directly upon the colon, since under these circumstances the second stool would also have been watery.

Although this experiment may seem to prove the correctness of their assumption as to the colon, it does not prove that the salt does not act directly upon the wall of the small intestine, and furthermore it is to be remembered that magnesium sulphate by the time it reaches the colon is probably no longer magnesium sulphate, but is changed into magnesium carbonate. It may be, too, that the small quantity which was present, in the solid stool of which they speak, was insufficient to cause an outpouring of liquid in the colon, and this view is supported by the well-known clinical fact that an injection of half an ounce of magnesium sulphate into the rectum frequently produces a copious evacuation. It is also quite possible in their experiments that the salt when taken by the mouth caused an outpouring of fluid into the caliber of the gut, but did not itself pass as rapidly onward into the colon as the fluid.

Hertz, Cook, and Schlesinger also think that the physical theory of the action of saline purgatives is thrown in doubt by the fact that in some individuals these substances act with difficulty. So far as we know this difficulty largely depends upon the dose given, and the amount of one drachm which they used is, of course, entirely inadequate in many persons. We do not think, therefore, that their argument has any force. Again, it is quite possible that the solid stool which they found to contain magnesium sulphate was solid because having been purged the day before the patient's tissues had been relieved of a certain amount of fluid, and as a result there was less tendency for fluid to escape into the intestine. This tendency to a scanty escape of liquid would be increased if during the twenty-four hours the patient had been thirsty or had had polyuria.

We doubt whether the observations of Otto, quoted by these investigators, to the effect that saline purgatives are retained in the stomach until they become isotonic with the body fluids by dilution with the secretion of the gastric mucous membrane, are correct. On the other hand, there is every reason to believe that when taken upon an empty stomach these saline purges speedily pass into the small intestine and produce their characteristic effects.

Against the views of Hertz, Cook, and Schlesinger almost all authorities can be arrayed.

It is a well-known fact that if a solution of sodium chloride, isotonic with the blood serum, be administered by the mouth little or none of it reaches a cecal fistula, since it is all absorbed in the stomach and small intestine. On the other hand, if the same quantity of an isotonic solution of sodium sulphate be administered most of it escapes by the fistula, only some 10 or 20 per cent having been absorbed by the stomach and small bowel. In other words, the sodium sulphate prevents absorption which the sodium chloride does not prevent. And it is well known that sulphates, phosphates, tartrates, citrates, lactates, and malates are comparatively unabsorbable; whereas the chlorides, iodides, bromides, and acetates are rapidly absorbed. The latter, therefore, do not produce purgation.

There can be no doubt whatever that the use of a hypertonic solution draws fluid from the blood into the bowel, as will also a concentrated solution of common salt to a less degree. In other words, the sodium sulphate prevents the absorption of fluid, and the processes of osmosis cause an outpouring of fluid into the tube in order to make the fluids in the body and in the tube isotonic. Furthermore, it is a well-known

fact that when large quantities of fluid are present in the tissues, as in cases of dropsy, these fluids can be gotten rid of by the use of concentrated saline purges. Another evidence of the fact that the purgative salines abstract liquid is found in the development of thirst after they have been freely given.

It is true that when the salt fails to purge and is retained in the bowel it eventually undergoes gradual absorption, as do nearly all substances which are not speedily gotten rid of after entering the alimentary canal.

We fail to see that Hertz, Cook, and Schlesinger have in any way advanced evidence which leads us to give up the generally accepted opinions stated at the beginning of this editorial note, and without meaning to deny that some of the sulphate of sodium or sulphate of magnesium is absorbed, and may possibly produce part of its purgative effect by stimulating the walls of the intestine, we still believe that their dominant influence depends upon their causing a retention of fluid in the bowel and in adding to that fluid by the pouring out of liquid from the tissues.

THE INTERNAL TREATMENT OF SYPHILIS.

To one who keeps fairly abreast of modern literature, it might seem that the internal treatment of syphilis is a thing of the past, the accurate dosage, the prompt results, and the comparative innocuousness of hypodermic medication apparently having been so fully proven that this method is now the one of choice. The practitioner, however, who sees many cases from many sources recognizes clearly that probably 90 per cent of cases the world over are treated solely and exclusively by internal medication; that in the vast majority of instances this medication is entirely efficacious in so far as combating the secondary manifestations of the disease is concerned; and that hypodermic medication is attended by certain unavoidable risks which are either absent or distinctly less marked when drug is given in another way. Among these risks may be mentioned embolism, which has resulted fatally in many cases; local infection, which, however, can scarcely be considered as unavoidable; extreme and crippling pain, and danger of salivation.

The newer pharmaceutical preparations have, to an extent, lessened some of these risks, but in spite of the propaganda in favor of the hypodermic administration of mercury it still remains the exceptional rather than the habitual way of using the drug.

It is the commonly accepted belief in the profession at large that the two drugs of service in the treatment of syphilis are mercury and iodine, the mercury usually being administered in the form of protiodide, bichloride, or mass. hydrarg., and the iodine in the form of potassium, sodium, ammonium, strontium, or rubidium iodide. As contrasted with these iodine preparations the potassium iodide is universally recognized as no more difficult of ingestion, and more prompt and efficient in its action. As to the late effects of syphilis, such as tabes, progressive paralysis, and cardiovascular lesions, which are responsible for obviously shortening the lives of about half of those who have become infected, it may well be that these lesions may be prevented by a more prolonged course of antisyphilitic treatment than is now commonly practiced, particularly in the direction of the use of iodine in one of its combinations. Indeed, from the therapeutic standpoint if it can be proven that the Wassermann reaction can be depended upon as a proof that syphilis is or is not cured, and if this reaction can be used as a safe guide for either the continuance or cessation of treatment, it is likely to prove one of the greatest boons conferred upon practice by laboratory research.

Rothschuh (*Folia Therapeutica,* January, 1909) calls attention to the varying treatment of syphilis in different countries, and notes that the Englishman, who has but little time to spare from business or recreation, takes his medicine in the form of pills or powders. The Frenchman revels in the elegance of the hypodermic syringe. The seriously minded and systematic German and northern races prefer the blue ointment

applied externally, whilst the American, in deference to his happy-go-lucky disposition, has no particular preference, but supplements any of the above methods by the liberal use of sarsaparilla. In the West Indies, Central America, and the tropical parts of South America, the natives make use almost exclusively of the herbal concoctions of their country, which must be regarded as the home of syphilis, and are completely cured. The rest of the world accepts the method of the people with whom it has most intercourse, with the qualification that in hot climates the inunction method is almost an impossibility owing to diminished cutaneous respiration through the blocked skin pores and the fact that the film of grease produces an intolerable heat and congestion.

Rothschuh states that the Mexican and Central and South American Indians, from whom European syphilis has been acquired, made use of sarsaparilla root, guaiacum, and sassafras woods and other drugs of their country, with or without the concomitant vapor baths, in precisely the same manner as their descendants do to this day. Rothschuh strongly commends fluid extracts of sarsaparilla, sassafras wood, guaiac, and cinchona bark, in mixture, taking large doses, with water enough added to make a sudorific draught. He concedes to mercury, however, the first place as a therapeutic agent. The preparation he prefers is the di-iodo-sulphate of mercury, containing 32 per cent of mercury and 4 per cent of iodine, holding that it produces less stomatitis than other preparations and is more permanent in its effect. Arsenic has always been regarded as a valuable tonic for the internal treatment of anemic syphilitics. As to whether or not the extensive use of atoxyl and similar preparations will be followed by the discovery of specific effects upon the infection, this is a question which must remain undecided for the present. As to iodine, the maxim that this drug is indicated in all late forms of the disease has maintained its validity, but even in the early stages symptoms of a periostitic or meningitic nature, as well as ulcerative processes, yield rapidly to the action of iodine.

Rothschuh regards iodoval as the most perfect substitute for iodide of potash, according to results obtained recently in research work carried out with the drug. It has a high iodine content (47 per cent), passes through the stomach unchanged, and dissolves in the intestinal tract in the form of sodium salt, in which shape it is carried into the fat and nervous tissues and splits up its iodine gradually during the next forty-eight hours, thus keeping the body under the influence of the drug for a considerable time. Its effect is pronounced even when small doses are administered. It exhibits a special affinity for the central nervous system, thus rendering it useful in the treatment of brain syphilis. The dose is 5 grains three times a day, and corresponds with three times the dose of potassium iodide. Rothschuh speaks favorably of the effervescent salts of iodine, stating that he had excellent effects from these drugs in the tropics.

DIRECT BLOOD TRANSFUSION.

The vivid interest taken by the profession at large in direct blood transfusion, incident in great part to the splendid promise of this procedure both in the emergency treatment of threatened death from hemorrhage and in its possible influence on metabolism in the case of certain infections or exhausting diseases, has found practical application at the hands of many operators, but as yet brilliantly successful cases remain distressingly few; nor can this be explained on the ground that the operation requires deft manipulation and special tools, since it is readily within the grasp of any practiced surgeon.

Perhaps the reason for many recorded and unrecorded failures is incident to the fact that although an anastomosis may readily be made the lumen of the supplying artery is so reduced in size that clotting readily takes place and the flow consequently ceases. A danger incident to the operation, but which can be avoided where

time is given for laboratory tests, is the fact that the donor's blood may exhibit a hemolytic influence on that of the patient. Indeed, many fatalities have resulted from this cause.

In so far as the method of end-to-end suture is concerned, this necessarily implies special needles and silk of unusually small size and great manual dexterity. Crile's modification of Payr's cannula makes the operation a fairly easy one. The cuffing back of the artery, however, very distinctly lessens its lumen.

Hartwell (*American Journal of Surgery*, March, 1909) in the course of a study designed for the purpose of both simplifying the technique of anastomosis and insuring the rapid flow of blood, addressed a letter to fifty-two surgeons connected with various hospitals in New York City asking for their experience with the operation. Replies were received from forty-five. Of the forty-five, twenty-seven had no experience, and eighteen had done the operation one or more times, seven being the greatest number reported by any one surgeon. The total number of operations recorded is forty-three, which with the five done by Hartwell gave forty-eight from which to draw conclusions. Of this number only six were done with a suture. Two of these were done by the writer, with partial operative success—that is, a certain quantity of blood entered the vein, but clotting took place before all that was desired had passed the anastomosis. In the other cases failures were recorded because of immediate clotting.

Forty-one were done with the cannula. Twenty of these, practically half, were regarded by the operator as either failures or only partial successes—that is, there was either no flow of blood or less quantity than was desired. In twelve out of twenty no flow whatever took place. The cause of lack of success is due usually to clotting of blood, though in one case the radial artery contracted so tightly that no blood would flow through the unimpeded cut end. The time during which the blood was permitted to flow after the anastomosis was complete was from twenty minutes to about one hour. Hartwell observes that if forty-five minutes are ever required, this demonstrates the flow must be very small. Otherwise the donor will be exsanguinated.

In a number of cases the observers differed greatly in opinion as to whether the blood was flowing or not. Indeed, with a very small flow it may be extremely difficult to determine this point. The majority of surgeons expressed the opinion that the operation should be classed as one of especial difficulty.

Hartwell has devised a method of transfusion which requires no special instruments and no unusual operative skill. It delivers, he believes, a free stream of blood, which is easily controlled.

The radial artery of the donor is dissected out for a distance of two inches, or more if convenient, under cocaine anesthesia; the small branches are isolated and tied, and a ligature is thrown around the distal end, but not tied. The wound is covered with a moist, warm pad. An accessible vein in the forearm of the recipient, below the bend of the elbow, is similarly exposed for the same length. If possible, a small tributary is dissected free for one inch at some point central to the proposed site of anastomosis. This is loosely clamped at its distal end. A ligature is then tied around the distal end of the main vein, and the vein divided just central to it. If needed, a light obstructing clamp is put on the vein higher up, but it is not always required. The adventitia is carefully stripped from the cut end of the vein as described by Crile, and three sutures of fine silk, impregnated with vaselin, are passed through the media and intima at a distance of 120 degrees on the cut circumference of the vein. The wound is then covered with a moist warm pad. The silk need not be finer than the ordinary No. 0, and the usual fine round intestinal needle answers every purpose. The artery ligature is now tied, an obstructing clamp gently placed on its central exposed part, and the artery divided with sharp, fine scissors just above the ligature. The adventitia is removed

from the cut end, and then a small roll of it is slid upward along the artery, for a distance of an inch or more, and left attached. Through this a silk suture is passed, tied, and cut about half an inch long. If possible, a small branch of the radial, at about one inch from its cut end, may be left long enough to take the place of this roll of adventitia. The artery is then immersed in liquid vaselin, and by means of a small forceps, gently grasping it at about one inch from its cut end, it is passed directly into the mouth of the vein, which is held open with the three sutures. The arterial wall is sufficiently rigid to make this step very easy. One, or if need be two, of the venous sutures are then clamped either to the suture in the adventitia or to the radial branch, in order to prevent the separation of the two vessels, and the excess of venous circumference clamped so as to snugly hold the artery, but not to constrict it. The obstructing clamps are then removed, and the flow proceeds.

Crile has called attention to the danger of overburdening the right heart, if the blood flows too rapidly, and one case in this series suggests that this happened. Digital pressure on the artery controls absolutely the rapidity of the flow. If there is at any time a question of the success of the transfusion, the clamp from the venous tributary is removed, when the arterial blood will be seen to spurt from the cut end. Experiments on dogs show that there is no tendency for fringes of clot to form around the cut end of the artery if it is well coated with vaselin. One precaution which can be more readily observed here than in the use of the cannula or suture method is the avoidance of air emboli. Both artery and vein can be filled with fluid blood just prior to the anastomosis, by removing for a second the obstructing clamps.

The method has now been used many times in the dog with great ease and perfect success. The only opportunity to use it clinically the author states was in one of the cases in which it was done four days following the first attempt. It was very easy of execution. A small radial branch was used for clamping the vein suture to, as well as the roll of adventitia. The tributary vein was accessible, and an arterial spurt of blood several inches high would pass through it when the full force of the radial flow was allowed to enter the vein. This indicator is of great value when it can be used, because it at once dissipates all doubt as to the patency of the anastomosis. On this occasion the radial artery was controlled by digital pressure for fear of overburdening the right heart. The anastomosis continued for forty-five minutes, and was then still very efficient, as shown by the venous indicator.

The order of procedure given above—that is, to first expose the artery, but not clamp or cut it, then to prepare the vein, and finally come back to the artery—is advisable. The first step is done on the donor, and if desirable the patient proper need not be present until it is finished. The reason that it is inadvisable to complete the arterial work then is that the longer clamping and exposure of the artery, while the vein is being prepared, may help to bring about its contraction so as to occlude the blood flow. The changes in the condition of both the participants were in marked contrast to those observed on the first occasion, demonstrating the loss of all the blood the donor could lose—in fact, more than he could safely lose.

A modification of the above method has been performed in dogs by passing the artery into a longitudinal slit in the wall of the vein. It is very easy of accomplishment in this animal, in which the artery is much less rigid than in man. No opportunity to try it clinically has yet occurred.

Rehling and Weil (*American Journal of Surgery*, March, 1909) contribute a case of hemolysis incident to transfusion, the special interest of which is incident to the fact that a preliminary test of the blood of the patient and that of the intended donor showed a tendency toward hemolysis.

REPORTS ON THERAPEUTIC PROGRESS.

ETHYL CHLORIDE IN GENERAL ANESTHESIA.

In the *Boston Medical and Surgical Journal* of February 25, 1909, DODGE asserts that ethyl chloride may be given in almost as large a variety of ways as ether —by means of a closed inhaler, in a semi-open mask, or poured on gauze held in the palm of the hand. This last is convenient and satisfactory in confinements, while the first or closed method is perhaps the best for examinations and short operations. In the ethyl-chloride-ether sequence the writer prefers the semi-open method, the distinction being chiefly in the amount of air allowed to mix with the anesthetic. The dangers of interference with respiration and circulation are often caused by using too concentrated a vapor and are greatly lessened by admitting a large amount of air. During its administration no cyanosis appears, but the face is invariably flushed and the breathing becomes deeper and more rapid, finally becoming stertorous as full anesthesia approaches; the pupils dilate, eyeballs are fixed and often turned down, and the reflex of the conjunctiva is abolished. In most cases muscular relaxation is not complete.

The following has proved to be a satisfactory procedure: A Blake ether cone with the gauze packing so arranged that there is a small, thinly covered place in the middle, on which the ethyl chloride spray is to be directed. Accurate adjustment of the rubber cushion of the cone to the face is a necessity, as no air must be allowed to get under the cone. Care is taken to reassure patients by letting them take a few breaths through the cone before putting on the anesthetic and informing them emphatically that there will be no unpleasant or choking sensations. Direct them to breathe quietly in the ordinary manner, and either through the nose or mouth as preferred. Do not allow any unnecessary talking or disturbance in the room. Ethyl chloride is now sprayed into the cone so that by moving the stream about the thinly covered place is thoroughly included and well saturated. After an average period of about sixty seconds the patient will be sufficiently anesthetized to change to ether; the cone is now filled with more gauze and a small amount of ether is poured on; ethyl chloride has been retained on the gauze in the form of frost to an appreciable amount, and by the prompt addition of the ether a mixture is breathed for a short time, and while the ether is gradually being increased the ethyl chloride disappears. In this manner the sequence is obtained without any spasm, and it is rare to have any stage of muscular excitement. Complete anesthesia usually results in about three minutes; the pulse-rate is not increased and is often lessened in cases where the patient had been frightened or excited at the idea of taking an anesthetic. The pulse also becomes softer owing to the dilatation of the peripheral blood-vessels. The amount used by this method is from 6 to 10 cubic centimeters for an adult, somewhat more than is the case when the closed method is followed out. The amount of ether is much less than when ether alone is used. As with other anesthetics, atropine hypodermically given half an hour to an hour before anesthesia is begun is of value in reducing the amount of mucus and saliva secreted. Morphine, scopolamine, and strychnine are occasionally of decided benefit; care should be especially used as to scopolamine in cases of arteriosclerosis, as here it is contraindicated.

The usual preparations, as for any general anesthesia, should be carried out, and where the patient does not seriously object, it is best to give the anesthetic on the operating table; this obviates the disturbance and shock which is caused by lifting the patient from bed to truck and truck to table while but barely narcotized, and who during the moving often comes out of the influence enough to retch and possibly

vomit. It also saves an appreciable amount of time, which is an element of great importance.

The writer's experience with the use of ethyl chloride as a general anesthetic dates from 1902, since which time he has used it in about 300 cases; in no case has he seen any unpleasant or untoward effects. The nausea and vomiting during recovery are usually less than is the case with ether alone, but occur more frequently than after nitrous oxide. In a series of about fifty cases in one private hospital the lessened after-sickness compared with patients who had been given straight ether was noticeable enough for nurses to mention it. Occasionally a patient was found who required an amount far in excess of the average without any satisfactory explanation; one particular case in point was a young woman who inhaled 60 cubic centimeters without losing consciousness, and nearly 500 cubic centimeters of ether was necessary to finally produce narcosis.

The use of ethyl chloride is contraindicated in partial stenosis of the air-passages, whether due to edema from within or pressure from outside, as in an enlarged thyroid, in diseases of the lungs, and in cases with a weak or uncompensated heart. It is difficult to anesthetize alcoholics with ethyl chloride, for the violent muscular movements to which such cases are so prone with any anesthetic make it hard to keep the cone properly adjusted.

The objection to the use of ethyl chloride usually made is that at least in general estimation it is not quite so safe as ether or nitrous oxide. Statements as to the frequency of fatal accidents with the various narcotics are of little value because only a comparatively small number of the cases anesthetized are ever reported, and the total number is not known. Various estimates are given, however, on the different anesthetics which may be taken as approximating the truth as to their relative safety. These estimates are: With nitrous oxide, 1 death in from 25,000 to 30,000 cases; ether, 1 death in from 15,000 to 20,000 cases; ethyl chloride, 1 death in from 10,000 to 15,000 cases; chloroform, 1 death in from 5000 to 10,000 cases.

The deduction from the above plainly proves that ethyl chloride is probably as safe as ether, but not as safe as nitrous oxide. Serious practical objections to the use of nitrous oxide are the bulk and weight of the apparatus necessary in administration and the alarming appearance of such paraphernalia to many patients, especially when they are children.

The conclusion reached by the writer is that ethyl chloride has sufficient advantages and points in its favor to warrant its administration in the majority of cases in which an anesthetic is employed.

HEMOSTASIS AND ANESTHESIA IN OPERATIONS ON THE NASAL SEPTUM.

VOORHEES says, in the *New York Medical Journal* of February 27, 1909, that if in the operator's judgment general anesthesia is desirable the operation may be performed at the patient's bedside quite as well as in a hospital, with due care, of course, for strict surgical cleanliness. A hospital is, however, always to be preferred, if the case is likely to be at all difficult or if there is a possibility of hemorrhage. The anesthetic may be administered through a tube hooked between the jaws. If ether is used the containing bottle may be placed in a vessel of warm water at the bedside and the fumes blown over by means of an ordinary hand bulb. Rectal anesthesia is excellent if one is accustomed to its use. Besides the ordinary equipment the surgeon will need a good electric headlight, preferably the Kirstein lamp fixed to a suitable reflector, all of which apparatus should be thoroughly tested before use. It is well to have a duplicate lamp and battery at hand in case anything goes wrong, for nothing is more annoying to every one concerned than to have the operation fail because of bad illumination.

The majority of rhinologists do this operation in the office, hence a description

of the technique necessary to this end is as follows:

Assuming that the preparations have been carried out as described, the patient is seated in the chair and is given a drachm of aromatic spirit of ammonia in two ounces of water. This diffusible stimulant greatly quiets the nervous fears of the patient and forestalls symptoms of cocaine poisoning by its partial antidotal action. The nose is now sprayed moderately with a solution composed of the following drugs:

Cocaine hydrochloride, gr. x;
Adrenalin solution, 1-in-1000, min. xxx;
Essence of wintergreen, q. s.;
Pure water, q. s. ad f℥j.

Pure water is here used in preference to distilled water, because it is much less irritating. The essence of wintergreen helps to prevent the solution from quickly becoming stale and unfit for use, and affords a pleasant flavor.

The nose is then packed with pledgets of cotton soaked in

Cocaine hydrochloride, gr. xlviij;
Adrenalin solution, 1-in-1000, min. xxx;
Essence of wintergreen, q. s.;
Pure water, q. s. ad f℥j.

Care should be taken that all excess is squeezed from the pledgets, as it is undesirable to have any of the solution get below the nasopharynx. The pledgets are flattened out and introduced on the point of an applicator, care being taken to see that they touch the septum at every possible point. This packing is left in for twenty minutes and then is withdrawn. The septum is now painted with

Cocaine hydrochloride, gr. x;
Adrenalin, 1-in-1000, to saturation.

Only just enough adrenalin should be used to dissolve the cocaine crystals. With a cotton-wound applicator dipped in this solution the surgeon should hunt for any area which will give pain when touched, and should hold his applicator against this area until the patient's eyelids cease to squeeze together—an excellent index as to sufficient anesthesia.

THE CARE OF THE RHEUMATIC CHILD.

In writing on this subject in the *American Journal of Obstetrics* for March, 1909, KERR tells us that the indications are:

(*a*) To combat the inflammation in the joints. This may be done by the stimulation of the cutaneous circulation. Along this line the hot-blanket pack and hot fomentations are used until the temperature falls or the acute pain is relieved.

(*b*) To limit or prevent an extension to the heart, lungs, pleura, or meninges. Here is the place for elimination. Skin, kidneys, and bowel must be kept active. Warm baths followed by cool sponging or friction over the parts of the body free from inflammation will be useful. Hot enemas are often very efficient. As a rule the author has given them once every twelve hours for two or three days. Here again it is necessary to lay special emphasis upon the value of absolute rest. Free water-drinking should be encouraged.

The clinical indications are:

(*a*) *Hyperpyrexia.*—This may be treated by the use of an ice-cap and sponging with tepid water, accompanied by mild friction and no drying. Unless the temperature rises above 102° F., it may be disregarded as an indication for direct treatment.

(*b*) *Pain in the Joints.*—Rest and the local applications already mentioned will relieve, and particularly if the joint be smeared with some oil twice daily.

(*c*) *To Limit Damage to Joints.*—Gentle or simple flexion of the joints just as soon as the temperature has subsided will limit permanent damage.

(*d*) *Tachycardia.*—When this occurs there should be applied over the heart a cold compress for at least fifteen minutes of every hour, or an ice-bag may be used in its stead. Small doses of the bromides are grateful as the child is usually in a very nervous state.

(*e*) *Profuse Perspiration.*—If this occurs during the first few days it should not be checked, but the little one should

be wiped dry as frequently as it occurs. Occurring later in the disease, it may be gradually stopped by a bath with a tepid temperature at first, which is gradually reduced to about 85° F. This may be used twice daily.

(*f*) *Anemia and General Debility.*—When convalescence is once fairly established the use of tonics is indicated. Every rheumatic child suffers more or less from blood impoverishment. In the very acute cases anemia is so severe and sudden that the demand for treatment is urgent. The author is quite in favor of an early though gradual return to the usual diet, and it is his habit to proceed as follows: After the restrictions as indicated previously, when the temperature touches normal, he begins the use of legumes, undextrinized cereals, and some of the dried vegetables, as peas, beans, and lentils. Baked potatoes and eggs are allowed the next day, and also fish. Within ten days after the subsidence of an acute attack the diet is liberal and meat is allowed once daily. He believes that it is most important that we give to the convalescent child a diet which is as nutritious as possible, and no doubt much of our prolonged convalescence was formerly due to the restriction of the diet for weeks after an attack. Sugar seems to him to be the most harmful article, and its use is always restricted irrespective of the prevailing condition.

The salicylates occupy a well-deserved place in the treatment of rheumatism. They are palliative, however, and for the time overcome or modify the rheumatic manifestations. Their use cannot be long continued in children because of their prompt tendency to disturb the digestion. Salicin is less objectionable than the salicylate of soda and can be readily given in the dose of one grain for each year of the child's age, and repeated every three hours. A reduction in the temperature and in the signs of inflammation in the joints is an indication for the reduction and somewhat rapid withdrawal of this class of medication. Aspirin has a weak but rather prolonged action as an analgesic in rheumatism, and its chief indication is in those cases in which the salicylates are beneficial and after the acute pain has been relieved by other means. But the pain of acute rheumatism in children is so insignificant, as a rule, that no internal analgesic is indicated.

Along with the administration of the salicylates, or immediately following the discontinuance of their use, bicarbonate of soda should be given. Its use must, however, be kept up for a long time (four to six weeks), although in steadily decreasing doses.

ACTINOMYCOSIS TREATED BY POTASSIUM IODIDE.

A case of typical actinomysosis of the jaw in a man who was in the habit of picking ulcerated teeth with grass stems is reported by GALLI-VALERIO and ROCHAZ (*Therapeutische Monatshefte*, January, 1909).

A hazelnut-sized tumor on the edge of the lower jaw was incised and greenish-yellow pus containing pinhead-size shining masses released. Examination showed typical actinomycosis granules. An ointment of potassium iodide was given and potassium iodide given internally, beginning with 24 grains and increasing to 32 grains daily. The discharge ceased in eight days. Two weeks later the tumor was much smaller and after another week could no longer be seen, although a mass of large pea size could be felt. The mouth could be opened freely, the motion previously having been painful. Iodide rash developed, but the treatment was continued for six weeks, when catarrh of the nose forced its discontinuance for a week. It was then continued with one week's interruption for six weeks more. Six months later the patient reported again, and there was no sign of the disease except a small mass of scar tissue adherent to the bone and free from the overlying tissues.

The authors believe that it has been proved that the disease in man is usually acquired from infected grasses and not from animals. The actinomyces fungus had been found on stems and particularly on

glumes of grasses, and in the actinomyces tumors of animals and man. Most of the cases reported in man have been in persons who were in the habit of chewing grass. The parasite occurs as a saprophyte on various grasses, especially on the heads, and Liebmann planting seeds with actinomyces spores was able to find the parasite growing on the plants developed from them.

The disease is always to be cured by large doses of potassium iodide if treatment is started early, and even in late cases is not hopeless. Operative treatment is not usually required, but does not interfere with the iodide treatment.

THE ADMINISTRATION OF OXYGEN FOR POSTANESTHETIC NAUSEA AND VOMITING.

In the *Wisconsin Medical Journal* for February, 1909, PEAIRS reaches the following conclusions:

Postanesthetic nausea and vomiting are of frequent occurrence and are due to a variety of causes.

The subject has not received the attention which it merits.

Preventive measures are not generally effective.

The administration of oxygen is of decided value. It is harmless and is easily given.

Patients to whom it is given soon regain consciousness.

Nausea and vomiting are reduced to a minimum, and postoperative discomfort is lessened.

EARLY TREATMENT OF SOME EPITHELIOMAS BY PURE RADIUM SALTS.

WILLIAMS in the *Boston Medical and Surgical Journal* of March 11, 1909, in writing on this subject states that the first point to consider is the kind of case that is best suited for treatment by radium. The amount of pure radium in the world is small; a single grain of the pure salt, a quantity possessed by few, is not as large as a pea. Therefore, to treat any large area by so small an amount of powder is inconvenient or impracticable; consequently the best opportunity for the use of radium is in cases in which the affected area is not very large. The next consideration is the depth of the disease. The beta-rays, which are present in a larger amount than the gamma, have remarkable healing properties, but do not penetrate deeply. Their range may be about one-half inch to one inch below the surface. In using radium, then, we are limited in two directions—in the size and in the depth of the affected area. Obviously, this remedy is best adapted to superficial growths, when they are small—that is, in the early stage. It is also suitable for cavities, and has the advantage over the *x*-rays in this respect as it can be used in places inaccessible to them. Within these limitations, which cover only a part of the field suitable for *x*-rays, radium has an undoubted advantage, and this advantage is not based on theoretical grounds alone, but is confirmed by clinical experience. The author has compared, for instance, the value of *x*-rays and radium by treating one-half of a superficial new growth and one-half of a tract affected by lupus with one remedy, and the other half with the other, and clinically radium was the better. It is safer because the dosage can easily be exact, and as a rule it is more prompt in its action than the *x*-rays.

The cases of malignant disease best suited for treatment by radium are more especially early epitheliomas. In the majority of such cases improvement takes place very soon; it may begin within three weeks and sometimes within one. This improvement is manifested by relief from pain or irritation, by the checking of the growth if it is in an active stage, or its stimulation if it is indolent, or in other ways. Radium is also of great value in keloids.

Some superficial growths of about one centimeter in diameter heal after a few, say half a dozen, treatments by radium; now and then after less than this number. On the other hand, in cases of long duration a long course of treatment may be required, but the average duration of treatment is

much less than with the *x*-rays, another important advantage for radium.

It is hardly necessary to emphasize the desirability of early treatment when employing this remedy. It should be used first in nearly all of these cases. If for any reason improvement does not take place promptly, operation can follow without harmful delay. The best opportunity for radium is when the growth is small, as already mentioned, and before operations or *x*-rays have been used.

But the use of radium is not limited to early cases; it may also be of value in those of long standing. The following is illustrative: C. D. had an epithelioma of seventeen years' duration which had been operated on several times and had also been treated by the *x*-rays when he came to the writer. At this time the new growth covered the temple and a considerable part of the left cheek, but it yielded to treatment by radium. Warts that have been irritated and ulcerate, a small patch that looks like chronic or subacute eczema, but does not heal, or a small sore that persists, particularly on the lip, may take on a malignant character, especially in persons of mature years. These and similar affections of the skin yield, as a rule, to radium even when they resist other treatment.

Recurrences take place after treatment by radium as well as after other forms of treatment or operation, but thus far have yielded to further treatment by this remedy.

The table of 69 cases of epithelioma that the writer prepared last June is, he thinks, sufficiently instructive to give again:

	Total.	Healed.	Not healed.	Under treatment.	Discontinued treatment.
Lower lip	14	11	..	1	2
Lid	9	6	..	1	2
Face	24	20	1	1	2
Auditory canal	1	1	..	..	..
Ear	1	..	..	..	1
Hand	1	1	..	..	..
Nose	19	17	..	1	1
	69	56	1	4	8

The author quotes from the paper read at that time in regard to these cases: "The average duration of the disease before treatment was begun was four and one-half years; 56 healed, 1 did not heal, 4 are under treatment, and 8 discontinued treatment, but these last, with one exception, were all doing well at that time."

As the length of time that has elapsed after healing is a very important consideration in estimating the value of a remedy, the author states that of the 56 healed cases, 23 have been well for two years or more, 9 of these 23 for more than three years, and 2 for more than four years. Recurrence took place in two of the 23 cases, in one a year and in the other two and one-half years after healing, but yielded to further treatment.

It should be clearly understood that these results have been obtained by using an efficient amount, 50 milligrammes of the pure radium salt.

To carry out treatment by radium properly:

1. Fifty milligrammes of pure radium bromide are desirable, but this is difficult to obtain and is very expensive. The author considers he was most fortunate in getting, over five years ago, 120 milligrammes of pure radium. About a year ago he wrote to a firm which has been interested in selling this salt and asked the price of pure radium bromide. The reply was that they had none of the pure salt and did not believe it existed, but they had some one-sixth as strong. A number of physicians are attempting to treat patients with radium too weak in quality and too small in quantity to be efficient, and this will doubtless tend to discredit this new therapeutic agent.

2. The radium should be placed in a capsule, covered with lead except on one side, which is at the end of a long handle, as a protection to the physician. The capsule, over which a clean rubber cot for each patient has been drawn for purposes of cleanliness, should then be passed slowly over the area to be treated or held over the special place for one-half to three and sometimes four minutes. The exposure should be made from one to three times a week; less often after healing has begun.

3. The remedy must be used with sufficient courage to obtain results, but with care to avoid harm, for a remedy that is of any value is a two-edged sword and requires judgment and experience in its use.

TREATMENT OF ERYSIPELAS BY MEANS OF CARBOLIC ACID AND ALCOHOL.

JUDD reports his results with this method in the *Medical Record* of February 13, 1909. About eight years ago he began to treat all cases of erysipelas by the method to be described, and since the first case so treated he has seldom failed of a satisfactory result and has discarded all other remedies in the treatment of these cases. Up to the present time his statistics show eighty-two cases treated, with five failures, ten delayed recoveries, and sixty-seven complete remission of symptoms in from twelve hours to four days. These cases have included not only the beginning stages of facial and other forms of erysipelas, but those in the advanced stages, in which the area involved has varied from the face only to the face and scalp, with marked general septicemic symptoms.

Almost the first result noticed by the patient is a complete cessation of the unendurable itching, burning, and throbbing. Usually within a few hours the nausea, if such is present, subsides, and within twenty-four hours the temperature sinks to normal, the pulse very rapidly falls in the severe cases from 120 or more to nearly normal, the appetite returns, and except for the diminished swelling, which remains for twenty-four or forty-eight hours longer, the patient is relieved from his distressing symptoms.

The technique of the method consists in painting with a swab of cotton the entire surface of the involved area, and extending about a half-inch into the surrounding apparently healthy skin, with a 95-per-cent carbolic solution. This is left until the purplish color of the inflamed area is replaced by a pretty complete whitening of the skin. It is essential to the success of the procedure that this whitening occur before proceeding to the next step in the operation. On the other hand, if the whitening is allowed to proceed to a thorough blanching a burn and a slough of the skin is caused, which will prove painful to the patient and add nothing to the efficacy. Where large areas are involved, it is advisable that only a portion be painted at a time. The second step consists in going over the whitened area very thoroughly with a second swab saturated with pure alcohol. If this swabbing is done thoroughly, the whitened area becomes once more pink, and the alcohol must be laid on until this is accomplished. After this other areas are treated with the carbolic, neutralizing with alcohol, until the operation is complete. It is essential that a half-inch of the apparently sound skin be included, as the bacteria of erysipelas are found beyond the apparently involved area. In some of the first cases he neglected this precaution, and found in twenty-four hours that while he had completely controlled the initially inflamed area, a ring of newly inflamed tissue extended out in all directions beyond, much as an advancing ringworm extends. This method includes the painting of the hairy scalp, the eyelids, the mucous membrane of the alæ of the nose, and the nipple of the breast, if necessary. He has failed to note any evil result from its use. There has been no toxic action of the carbolic in any case so far observed, although the urine is sometimes darkened and of characteristic odor. The temperature rapidly falls, and in severe cases it is frequently necessary to support the patient with stimulation of strychnine and whisky.

In looking over his statistics, it has been interesting to observe that, in the majority of cases of failure, the patients have been young children. These have also been the cases in which they have had the greatest number of symptoms of absorption of carbolic acid, which is supposed to be due to the more delicate texture and more rapid absorbing power of the skin in these young patients.

An observation made in one of the

earlier cases proved interesting. This was a recurrent, postoperative case of tuberculous osteomyelitis of the tibia in which erysipelas developed. When the author saw this case in consultation, the patient, a girl of thirteen, was suffering from an inflammation involving the entire leg and part of the thigh. The parts were tremendously swollen, the patient had a temperature of 106°, was delirious, had had nausea and vomiting, and an imperceptible pulse. The author suggested that, as the patient was apparently nearly moribund, it would do no harm to try this treatment. Much to his surprise the following morning he was called on the telephone by the physician in charge, who informed him that the patient had a subnormal temperature, that the pulse was nearly normal, the child was asking for food, also that he had been stimulating since early in the morning with large doses of whisky and strychnine. The child made an uninterrupted recovery.

THE CONJOINT USE OF TUBERCULIN AND ARSENIC.

The simultaneous exhibition of tuberculin and arsenic is recommended by MENDEL *(Münchener medicinische Wochenschrift,* No. 1) on the following grounds:

It is well known that arsenic (like iodine and mercury) shows a tendency to collect in large quantities in inflamed tissues, and secondly, that tuberculin in moderate dose causes an inflammatory zone immediately surrounding the tuberculous areas. By administering them together we may thus cause a deposition of arsenic around and in the tubercular tissues, where its presence is desired.

To avoid local reaction the substances should be given intravenously, and may be given together. It has been shown that the agglutination reaction reaches its height eight days after tuberculin injections, and they should therefore be given at this interval. The arsenic should be given every other day, and tuberculin added to every fourth injection. The author uses atoxyl in doses of 5 to 30 centigrammes and slowly increased doses of tuberculin. These should call out merely a slight and fugacious febrile reaction. The results of this treatment have been remarkably good in most cases of tuberculosis of the lungs, although in a few instances it has had but little effect. It should probably not be used in febrile cases.

THE ORAL ADMINISTRATION OF ANTITOXINS.

In the *Journal of Infectious Diseases* of February 18, 1909, MCCLINTOCK and RING reach the following conclusions in regard to the oral administration of antitoxins:

Toxins and antitoxins when given by mouth are usually rendered inert by the digestive processes. Their therapeutic or immunizing value is uncertain and not to be relied upon, but if digestion is inhibited, which may be readily accomplished by the use of appropriate drugs, toxins and antitoxins are absorbed unchanged and apparently in sufficient quantity and with such uniformity as to warrant the use of this method for therapeutic and immunizing purposes.

In treating children with antitoxin per mouth, the following method has given uniform and satisfactory results: One-half hour before administering the serum the child is given one glass of one-per-cent sodium bicarbonate solution. When the antitoxin is given there is added to it one minim of fluid extract of opium and from four to ten minims of a saturated solution of salol in chloroform. If possible no food should be given for at least four hours before administering the serum.

In the 19 children and the hundreds of animals used in these experiments, there was no evidence of any "serum sickness" or anaphylaxis, and in the opinion of the authors the oral method of administering antitoxins of tetanus and diphtheria is the preferable one for prophylaxis, because of the absence of danger and the ease of administration, and because the cost may be very materially lessened.

The hypodermic method of administering sera for curative purposes is, however,

the only one to be recommended unless extensive clinical experience shows that the oral method is equally efficacious.

A relatively high degree of immunity may be produced in animals by the oral administration of antitoxin if the absorption of the same is promoted by such means as the authors have suggested.

THE TREATMENT OF THE DISEASES OF THE CEREBRAL ARTERIES.

In the *Journal of the American Medical Association* of February 27, 1909, MOLEEN states that the all-important factor is rest and quiet as soon as symptoms of a definite character are established. The diet should be carefully guarded. A constant peculiarity to be noted in most cases is the abnormal appetite; the patients veritably eat until they cannot walk, and to keep the consumption of food down will be no little task, since they do not seem to appreciate the amount they are eating. While the patients are at rest the diet should be light, easily digestible, and limited in quantity.

Iodine, notwithstanding opinions to the contrary, in view of its action in increasing catabolism and its tendency to attack those tissues most recently formed, is obviously of value here. It should be borne in mind, however, that since increased blood-pressure has been the cause, this must first be met if the most pronounced effect of the medicament is to be obtained. The results with potassium iodide are much more prompt and marked if absolute rest is maintained than if not. Iodides are too often regarded as antisyphilitics, and the administration of them is assumed to be indicated by reason of syphilitic disease. This is, however, not the case. Iodine is not antagonistic to the virus of the disease; it is, or should be, used only to remove the results of the disease—hyperplasia, granulomata, etc.—and is indicated when the same conditions exist, as a result of other infections as well as those of syphilis.

Then the plan which the author employs is as follows:

1. Absolute rest in bed.

2. Saline catharsis (preceded by calomel, if necessary); magnesium sulphate or sodium phosphate may be employed. This is an effective means of keeping the tension moderate or low.

3. Potassium iodide, beginning with 10 minims and increasing a drop each day of the saturated solution until 50, 60, or 70 drops, three times daily, are reached. Should iodism be manifested, the iodide may be stopped for twenty-four hours and resumed where it was left off. After the maximum is reached it should be diminished until 30 to 20 drops are taken and then discontinued. A tonic may then be instituted, such as strychnine, beginning with 1-30 grain and later increasing to 1-24 or 1-20 grain. It is best given in the compound syrup of phosphates of the National Formulary, which is a rich phosphate reconstructant.

If the hemoglobin is low, iron and arsenic may be alternated with the above.

If syphilis is a probability, the virus should be combated with mercury alone as soon as possible, followed by iodides, and later with tonic chalybeates.

The so-called serums, such as Poehl's and that of Trunecek, antisclerosin and the like, which contain in the main sodium chloride, sodium sulphate, sodium phosphate, sodium carbonate, magnesium phosphate, and glycerophosphate of calcium, are advocated, and some good results are claimed for them. They are best given after the more acute symptoms have subsided, such as twitching, localized weakness, numbness, and tingling.

When sudden weakness, uncontrolled twitching, or spasm comes on suddenly and progresses rapidly, nitroglycerin or sodium nitrite may be used with advantage until, by saline catharsis, the hypertension may be reduced. Thyroid extract has also been highly recommended for the control of the high tension.

Another remedy is deserving of more attention than it has received, namely, thiosinamin. This substance was first introduced by von Hebra in 1892, who found it of value in the treatment of lupus and

old cicatrices. That it possesses the power of softening cicatricial tissue such as strictures, corneal opacites, and adhesions at the base of chronic deafness has been frequently observed. The author has used it with apparent good results. In one case of cerebellar gumma it was given following a very heavy course of iodide in view of the evidence of cyst, the capsule of the tumor having apparently resisted the iodide; the post-mortem revealed a secondary hydrocephalus from obstruction to the foramen of Magendie, and a slight cavity at the suspected situation, communicating with the fourth ventricle, but no capsule.

It is given in substance or with milk-sugar in increasing doses of from ½ to 2 grains.

INHIBITION OF INTESTINAL PUTREFACTION.

The *New York Medical Journal* of January 30, 1909, points out that although the physiology of intestinal digestion, in so far as the action of the intestinal secretion itself, the pancreatic juice, and the bile is concerned, has been reasonably well understood for many years, an appreciation of the rôle played by certain benign germs, notably the lactobacillus, is of comparatively recent date. In these days, when we attribute a steadily increasing number of ills to intoxication from the intestinal tract, the action of these bacteria in assisting to maintain the normal equilibrium of digestion cannot well be overestimated. The investigations of Metchnikoff regarding the action of the lactobacillus in albuminoid digestion are so well known that detailed mention here of his findings is unnecessary. While clinical tests undoubtedly have substantiated his theories, in some respects it is difficult to make these findings coincide with accepted notions relating to digestion.

The amylolytic period of gastric digestion is known to vary in accordance with the size and character of the meal ingested, but is generally something like three-quarters of an hour. During the second, or hydrochloric acid, period of digestion the antiseptic action of the free hydrochloric acid of the gastric juice comes into play, and the great majority of the bacteria ingested with the food, and notably those that cause fermentation and putrefaction, are destroyed. In from four to six hours after an ordinary meal the stomach has become entirely empty of food and contains a small amount of clear fluid of a neutral reaction devoid of hydrochloric acid and of pepsin.

Diminished secretion of hydrochloric acid, as is well known, interferes with albuminoid digestion and decidedly lessens the power of the stomach to prevent decomposition and fermentation; in other words, albuminous bodies are imperfectly digested, the development of fermentative and putrefactive microörganisms is unrestrained, and lactic acid production occurs in pronounced excess. This abnormal chemical activity in turn produces a paralysis of peristalsis and of muscular tone, necessarily the period of gastric digestion is greatly prolonged, and the antiseptic action of the secretions is destroyed. During the entire period of stomach digestion a separation of the solid and fluid contents is taking place, and the latter, little by little, are passed through the pylorus into the duodenum.

Leaving out of consideration possible abnormalities in the several digestive secretions present in the upper part of the intestinal tract, it is acknowledged that putrefaction and fermentation in this area are largely due to the action of the bacillus butyricus. When amylolytic digestion and the succeeding gastric processes as well have been interfered with, the imperfectly transformed stomach contents when passed into the intestine prove a perfect nidus for the development of butyric fermentation. Metchnikoff has shown that the introduction into the duodenum during digestion of pure culture of bacillus lebenis, a bacillus peculiar to Bulgarian sour milk, definitely arrests putrefaction, not only because the lactic acid produced inhibits the multiplication of the putrefactive microbes, but because of the antiseptic properties of another, as yet unknown, substance produced by it. Furthermore, the Bulgarian bacillus forms neither alcohol nor acetone,

two products frequently resulting from bacterial fermentation. It also differs from other lactic ferments inasmuch as it exerts no action on albuminoids (casein, etc.) or on fats. According to Metchnikoff, "all these qualities make it much the most useful of the microbes which can be acclimatized in the digestive tube for the purpose of arresting putrefaction and pernicious fermentation, such as is produced by the bacillus butyricus and other germs."

While diseases of the alimentary canal as a rule do not decidedly affect the urine pathologically, it is a well-known fact that, in the absence of pus formation in the body and of cachexia, albuminous putrefaction in the intestines increases the amount of indoxylsulphuric acid salts and of phenol. Indicanuria, therefore, while varying in accordance with the severity and the length of time the putrefactive process has existed, is accepted as a positive sign of its presence. Proof of the soundness of Metchnikoff's argument is found in an amelioration of subjective symptoms and a marked diminution in the amount of indol and of phenol in the urine after the inhibition of putrefaction has been brought about by the ingestion of the Bulgarian bacillus.

In view of the somewhat remarkable enthusiasm with which the teachings of Metchnikoff have been accepted in this country and of the prodigious quantity of lactic ferment products now being prescribed, it seems advisable to call attention to Tissier's dictum: "From a practical point of view, when it is desirable to arrest intestinal putrefaction, we must first of all modify the chemical condition of the intestinal tract in order to render it unfavorable to the microörganisms which attack the albuminoids, and which, on the contrary, are favorable to mixed acid ferments."

The lactobacillus, as compared with many others, is not tenacious of life. Because of this fact and also because the object to be attained by its introduction into the human organism is its rapid and unimpeded multiplication, it stands to reason that conditions in the stomach and intestinal tract should be made as favorable to this end as possible. Ordinarily the bacillus is prescribed in pure culture developed in bouillon or other suitable medium, in milk, or in tablet or powder form, immediately after meals. It is reasonable to suppose that practically in every case in which this course of treatment is indicated not only is intestinal digestion impaired, but gastric digestion as well; yet apparently this fact is not considered important. From what has been said above, it would appear in every instance that if favorable results are to be expected, existing gastric conditions should be carefully studied and, if necessary, corrected as far as is possible before the bacillus treatment is begun; also, under all circumstances, that far greater benefit will be achieved by administering the germs at such times as the stomach is empty of food, and the reaction of its fluid contents is similar to that of the intestine in which the microbes are to accomplish their mission—that is to say, from four to five hours after meals.

[The various forms of the lactic acid bacillus are now obtainable in the general market.—Ed.]

LACTIC ACID AS AN AGENT TO REDUCE INTESTINAL PUTREFACTION.

Heinemann in the *Journal of the American Medical Association* of January 30, 1909, summarizes this matter as follows:

The usefulness of lactic acid or lactic ferments as curative agents for intestinal putrefaction is still problematical. Much evidence in its favor has accumulated of late years, and it is to be desired that exact scientific investigations of a decisive character will be undertaken.

The evidence in favor of the use of *B. bulgaricus* as a lactic-acid-producing organism for the purpose of arresting intestinal putrefaction is not convincing. The association of streptococcus lacticus with the Bulgarian bacillus leaves doubt as to which one of the two organisms is the one responsible for the beneficial effects claimed. The Bulgarian bacillus produces a disagreeable taste in milk by decomposing

some of the fat, and the addition of streptococcus lacticus is universally practiced to overcome this difficulty.

The experiments which have been reported in regard to finding the Bulgarian bacillus in the feces are incomplete, in so far as no statements are made in regard to the number of these bacilli found in relation to other intestinal bacteria, especially in relation to intestinal streptococci.

Assuming that the presence of free lactic acid in the digestive tract is beneficial, it has not been definitely shown that lactic acid is actually produced in considerable quantity by the presence of lactic acid bacteria in the intestines. The evidence is decidedly in favor of the introduction of sour milk, or pure cultures of lactic acid bacteria, in connection with a diet in which milk is a prominent feature. Lactic-acid-forming bacteria are constantly present in the digestive tract, and there is no convincing evidence that the additional introduction of lactic acid bacteria is of benefit.

There is so far no convincing evidence that sour milk prepared with commercial cultures is preferable to naturally sour milk as far as the therapeutic effect is concerned. It seems advisable, however, to boil or pasteurize milk if good reliable "certified" milk is not obtainable, and if this is done an artificial starter is necessary. For this purpose either one of the commercial preparations may be used, or one of the commercial butter starters. In those countries where sour milk is generally used the starter consists in a small amount of the previously prepared milk. This can be done with any other starter. A small amount of the prepared sour milk may be used for inoculation of the next lot after this has been boiled or pasteurized.

In spite of Metchnikoff's statement that the presence of yeasts is detrimental, the commercial preparations investigated, excepting only "Lactone," contain yeasts in large numbers. Undoubtedly some alcohol is produced by these and probably some esters which impart aroma to the sour milk. Yahourth of the Bulgarians, kefir, kumiss, leben, and all the other fermented milk beverages contain alcohol-forming yeasts, although the amount produced is very small.

THE SERUM TREATMENT OF CEREBROSPINAL MENINGITIS.

HOLT, in the *Journal of the American Medical Association* of February 6, 1909, states that the serum he used was obtained from a horse which had been immunized by injections derived from many strains of meningococcus. His plan was as follows: After making the spinal puncture, as much fluid is withdrawn as will come away readily. The head of the patient should be lowered and his hips raised. It requires some experience to acquire the technique of puncture and injection. The dosage has not yet been measured, and in giving the serum it was administered in cubic centimeters and not in units. The initial dose is 30 Cc. During the epidemic of 1905, the Board of Health reported 2700 cases of the disease, with a mortality of 73.5 per cent. This treatment has no value in cases not due to the meningococcus. Of 59 patients under two years of age, treated by the meningococcus serum, 34 recovered and 25 died, a mortality of 42.4 per cent. In 88, between the ages of two and five, the mortality was 28.4 per cent; in 104, between the ages of five and ten years, the mortality was 15.4 per cent; in 149, between ten and twenty years, the mortality was 27.5 per cent; in 123 patients twenty years and over the mortality was 39 per cent. The results according to the time of injection show that of those injected during the first three days under two years the mortality was 9 per cent; of those from two to five years old, the mortality was 22.8 per cent; of those between the ages of five and ten the mortality was 12.3; of those between the ages of ten and twenty the mortality was 24; and of those over twenty the mortality was 44.5 per cent. Those injected from the fourth to the seventh day showed a mortality of 21.1 per cent for those under two years, 32.5 per cent for those from two to five years,

12.2 per cent for those between five and ten years, 24 per cent for those from ten to twenty years, and 37 per cent for those twenty years or over. Of those injected after the seventh day the mortality was 71.4 per cent for those under two years of age, 27 per cent for those from two to five years, 22 per cent for those from five to ten years, 36.6 per cent for those from ten to twenty years, and 36.6 per cent for those twenty years or over.

MALARIA.

In an article in the *Clinical Journal* of January 25, 1909, SANDWITH reminds us of the evident fact that in the treatment of malaria, quinine is the specific which is certain to cure. A few points in the treatment ought, however, to be specially remembered. Rest is important; quinine is more effective when the patient is confined to bed, recovery is more certain, and the danger of pernicious symptoms is lessened. Rest in bed must always be insisted upon in malignant forms of the disease.

According to the author's temperature charts soon after the administration of quinine the temperature drops. Malaria is the easiest disease to cure, though not easy to prevent.

As regards diet, nourishing liquids should be given during the fever, and for twenty-four hours after the temperature becomes normal. Calomel in small doses should be taken either before the quinine or with it, until the bowels move freely. Calomel favors the action of the quinine. The room should be quiet and well ventilated, and the patient, for the sake of others, should be protected from mosquitoes, because, as he has malaria and mosquitoes are possibly flying round him, any Anopheles mosquito coming to him and afterward going to a healthy person can convey the disease. Quinine acts most effectively on the malarial parasites until the pigmentation begins within the red blood-corpuscles.

There is something to say about the kind of quinine that should be given. There are twenty different salts of quinine; the author mentions five of them. First of all, the sulphate, which is our oldest friend. This salt of quinine is most commonly used because it is the cheapest and best known. The objections to it are that it requires 800 parts of water to dissolve it, so that coated tablets have been known to pass through the patient undissolved. We are therefore obliged to dilute it with an acid—sulphuric acid—which is not a pleasant thing for the stomach of a sick man. But there is no reason why sulphate of quinine should be given, and there is every reason for not giving it. The hydrochloride, 1 part of which is soluble in 40 of water, is much better. Bihydrochloride is better still, because it is soluble—1 in 2 of water, but it is a little more expensive. The bisulphate is exactly the same price as the sulphate, and is soluble in 1 in 11 of water. This is now used in the British navy and army, and ought to be used in the hospitals. Euquinine, which causes cinchonism (deafness and buzzing in the ears), is sometimes useful for children and delicate people. It is much more expensive than the other kinds of quinine.

The time to give quinine is important. When the paroxysm has begun or when a patient is in the middle of an attack, quinine will not check it and will only make him more uncomfortable. Wait till the sweating stage has begun or until a period without fever before the next attack. If this is done, the quinine comes into contact with the youngest forms of parasites and acts most vigorously. Continue the quinine for at least a month after all symptoms have ceased, and you will hear nothing from your patient about constantly recurring attacks of malaria and that old stupid myth that once having had malaria you must always have it.

There are several different ways of giving quinine. By the mouth is the most common method, either in solution, capsule, cachet, pill, or powder. If you give the bihydrochloride you may use an uncoated tablet, and it will be dissolved before leaving the mouth unless quickly swallowed. To give quinine per rectum is unsatisfac-

tory, whether by enema or otherwise, because absorption is slow and some irritability is caused. Moreover, you have to give 50 per cent more than by the mouth. If you cannot give it by the mouth you should give it by the intramuscular method, not the hypodermic, which is apt to produce abscesses. Make it intramuscular, injecting aseptically into the buttock, flank, chest, or somewhere else. Then the quinine will act very quickly and you will get no abscesses, though you may get some local tenderness and hardness for a few weeks. If a patient is comatose and dying the intramuscular method is not quick enough, and doctors in the tropics employ the intravenous method.

With regard to the dose of quinine for an adult, less than five grains are, the author believes, useless for malaria, and a waste of time. He also believes that more than 30 grains in twenty-four hours are useless. Ten grains every two hours—that is, 30 grains per day for two days running, if given after paroxysms—will cut short quartan and benign tertian varieties. As to the summer-autumnal fever, give 5 grains every four hours for one day and then 5 grains every six hours for two days more. Giving the bihydrochloride by the intramuscular method we may administer 8 grains every night for three nights, and after the initial treatment repeat the quinine twice a week.

The patient's idiosyncrasy has to be considered. Some will tell you they cannot take quinine. Most of these are not telling the truth, and if they are telling the truth it is unwise for them to go to a tropical country. The author cites a case of a woman in which he was asked for a tonic, and he gave 2 grains of quinine three times a day. After two days he was asked to visit the patient and found her in bed ill, with blood in her mouth and on the pillow, and with odd purpuric spots about her. He said to her, "Have you had this before?" "Yes, once, and curiously enough it was after a tonic, too." "What tonic was it last time?" The author found it was quinine. Some doctor in London had given her that, and this patient suffered twice from hemorrhage simply because she had taken two or three two-grain doses of quinine. People who suffer from singing in the ears, deafness, and headache can be helped to a considerable extent by taking dilute hydrobromic acid, 20 minims at a time, with each dose of quinine.

The symptomatic treatment of malaria is warm drinks and extra clothing in the cold stage, and sponging in the hot stage. In the burning stage antipyretics mostly do harm by weakening the patient.

TREATMENT OF PERNICIOUS ANEMIA.

BRAMWELL in the *British Medical Journal* of January 23, 1909, states that during the past year he has met with two cases of advanced pernicious anemia in which, after a certain degree of improvement had taken place under arsenic, arrest of the improvement occurred, and in which the administration of iron was then attended with very marked and rapid alteration for the better.

It has for long been recognized that in typical cases of pernicious anemia, in which the color index is above the normal and each individual red blood-corpuscle contains more than the normal amount of hemoglobin, the administration of iron is usually unattended with benefit, and is in many cases apparently injurious. This has been the author's experience; but he has met with some exceptions, amongst which the two cases he has just reported are perhaps the most striking.

IMMUNITY PRODUCTION BY INOCULATION OF INCREASING NUMBERS OF BACTERIA BEGINNING WITH ONE LIVING ORGANISM.

WEBB, WILLIAMS and BARBER in the *Journal of Medical Research* for January, 1909, write on this subject and state that the need for some form of vaccination against tuberculosis will probably always be felt, in spite of the forty to fifty per cent decrease in the death-rate in certain educated communities.

Vaccination, applied fully and repeated

once or twice in the age of greatest predisposition, has almost abolished smallpox whenever it has been tried. Nothing else has done this, and all localities fail that try to get along on sanitation alone.

The question of applying the procedure to man is to be approached with considerable care. Should he already have tuberculosis in any form it is difficult to imagine that the addition of one bacillus to his probable millions could harm him, and yet even more difficult to imagine it could possibly do him any good. But should that unit begin to produce some immunity, especially a local immunity, the subsequent introduction of say five, and then perhaps multiples of five or less, might find the way prepared for their destruction and so general immunity might progress.

Perhaps the highest art to-day in the treatment of pulmonary tuberculosis consists in the control of the patient inoculating himself, or autoinoculation resulting from exercise, elaborated by Paterson and Inman.

Such autoinoculations must result in the discharging into the lymph and blood channels from the foci of disease not only toxins but in all probability live bacilli. It would be of great interest to make a study of blood cultures before and after such exercise. The authors have themselves observed in similarly exercised patients changes resulting in their opsonic indices of greater extent than they have found produced by the inoculation of tuberculin. F. Klemperer inoculated tuberculous patients with cultures of virulent bovine bacilli. Moeller inoculated tuberculous patients with a culture of human bacilli, modified by passage through the crocodile. Every one knows that a local suppurative tuberculosis occurring in a consumptive improves his condition and increases his resistance.

The authors have inoculated five tuberculous men. The inoculations have always been made in the leg, arm, or forearm in such a manner that each new injection was received just below the former, the reason for this being that should any local immunity be established the new bacilli would perish more readily passing through such an area.

The chief interest of these cases lies in the fact that no harm has been done that can be recognized, after one hundred and fifty days (January 9, 1909); that remarkable benefit accrued in two cases considered hopeless, and this with few bacteria injected in proportion to what would be present in tuberculin therapy. From their work on guinea-pigs they feel that some immunity can be safely produced by beginning with the subcutaneous inoculation of one tubercle bacillus, and we regard such a method as being harmless, and more than probably beneficial to an already tuberculous man.

PURIN-FREE DIETARIES AND GOUT.

The *British Medical Journal* of January 9, 1909, in an editorial article says that, speaking generally, the foods which contain little or no protein should be the first to be discarded and the last to be resumed. Unfortunately, however, these are the foods which provide the pleasurable and stimulating effects of eating. It is thus an advantage not to change the dietary too abruptly, and for a fortnight or so the patient should be advised to restrict slightly the amount of food taken and to eat fish or meat once a day. With regard to drink, not more than two small cups of tea or coffee or chocolate should be taken daily. Soups, beer, ale, and porter ought to be avoided, but claret, Burgundy, hock, whisky, or gin may be substituted when there are no conscientious objections to them. For total abstainers quassia or other bitters are useful, but fermented temperance drinks are not well tolerated. Condiments may be permitted unless renal conditions contraindicate their use.

After this probationary period the "purin-free" diet may be prescribed. The term "purin-free" is, however, a misnomer. A precisely "purin-free" diet would be composed of milk, eggs, white bread, cheese, butter, and a few vegetables; but

when the milk contains many cells, as it often does, and the eggs are not absolutely fresh, as they often are not, their purin content comes within the range of our present chemical methods. Because a food is poor in purin we have assumed in the past—and probably have erred in doing so—that it could not disturb the general purin metabolism; we have yet to learn whether this is so or not. We are really dealing, therefore, with a dietary which is designedly poor in purin. For this purpose the following foods are at our disposal: Milk—fresh, soured, buttermilk, or whey; eggs—boiled, poached, scrambled, or raw; white (not brown) bread and butter; macaroni and cheese, rice, tapioca, and vermicelli. Suet may be used for puddings of all kinds, such as currant or jam roll, treacle, apple dumpling, etc. Pastries, pancakes, jellies, and the usual tea cakes are also available. All vegetables, except the pulses (peas, beans, and lentils) are poor in purin. Practically all fruits may be permitted. As to drinks, tea, coffee, and cocoa are excluded, and hot water, claret or Burgundy, mineral waters, or hot milk may be substituted. Beer and porter should be discontinued, and alcohol diminished as far as the usual habits make possible. Condiments are generally craved for, and there is nothing to be gained by withholding them unless they are otherwise contraindicated.

After a month or so of this diet a return to the usual form of human food should be attempted. Brown bread, oatmeal, whole-meal, beans, peas, nuts, asparagus, or mushrooms may be gradually added. If it is desired to employ vegetable protein only, then these latter foods should play a large part in the dietary. When animal protein is preferred, sweetbread should be the first kind of meat allowed, since the purins contained in sweetbread are "bound purins," and are badly absorbed, the greater proportion passing out in the feces. Later, codfish, sole, plaice, mutton, and chicken may be permitted; salmon, halibut, and beef and pork being reserved for later periods. When meats are again taken they should be stewed, not roasted, and milk sauce substituted for the meat gravies.

Even when a return to full diet is made it is well to restrict tea, coffee, and cocoa, and to limit soups. With regard to extracts, there is little to choose between any of the obtainable preparations. The purins of yeast extracts are less well absorbed than those of meat extracts, and theoretically are less harmful, but the differences are exceedingly slight.

It will be evident that the prescription of a diet poor in purin calls for careful observation on the part of the physician. The danger-signals of starvation, of glycosuria, and of mental bias should always have attention, and a return to the average dietary should be the object aimed at. Much information may be gained by the daily determination of the total purin output by clinical methods, but when this is impossible the weight and general condition of the patient may afford useful information. A probable result of the treatment will be a diminution of the amount of protein consumed, but the quantity of food necessary for the maintenance of life and for the provision of latent resistance to disease varies with every individual, and with the same individual at different periods of life, so that it is well to realize that rigid prescriptions and rules as to food are but rarely applicable, and that the percentage of good results from the use of a diet poor in purin depends largely upon the sagacity of the physician, and even then is not so high as the enthusiast suggests.

TREATMENT OF ENLARGED THYROID.

JUDD in the *New York Medical Journal* of January 2, 1909, writes of the treatment of enlarged thyroid by the *x*-rays and high-frequency currents. His method of treatment has differed somewhat from that used by most *x*-ray workers. He has found that a very high tube—that is, one rich in penetrating *x*-rays—placed at a distance of nine inches from the patient, the tube focused upon the gland and the other parts well protected with lead-foil, has given the best

results. The treatment is usually maintained for fifteen minutes twice a week, and up to the present time without even symptoms of erythema. A slight browning of the skin usually results, however. In cases in which the tachycardia is extreme, it has been his custom, in addition to the *x*-ray, to use the high-frequency Tesla current, applied by means of a glass electrode over the cervical sympathetic on both sides of the neck. The effect of this current, as noted by other observers, as well as by the author, is distinctly sedative, both as to the heart action and the general nervous system, the pulse-rate falling from 10 to 20 possibly before the cessation of the treatment, which is continued, as a rule, for five minutes on each side. This diminution in the pulse-rate persists for from a few hours to forty-eight hours, gradually increasing in length as the treatment goes on. Whether the effect of this current is simply that of a general sedative in which the heart partakes, or whether it is due to a specific action upon the cervical sympathetics, the author is as yet unable to determine. When applied to other parts of the body its gentle sedative action is quite as marked. Indeed, it is not uncommon to find our patients, when treated for whatever cause, drowsy to the point of somnolence, and, indeed, even sleeping quietly, if in a reclining position, at the end of the treatment; but the author has not found such marked effect in lowering the pulse-rate as when applied over the cervical sympathetic.

It has been his fortune during the past three years to operate in four cases of enlarged thyroid treated by himself or other men by the *x*-ray. Of the three reported two cases were treated by the ray, with the result of rather increasing the size of the gland. Pathological examination of the specimens in these two cases showed a great increase in the fibrous element and a desquamation and partial obliteration of the acini. The fourth patient, in whom improvement has been very considerable from the treatment, but in whom a relapse had occurred, showed a gland, hyperplastic in character, with the cells in many of the acini obliterated and with small necrotic areas and a certain amount of obliterating endarteritis. The author is still convinced that the choice of procedure in enlarged thyroid is an operation for the removal of a portion, at least, of the gland, and in these days of bloodless operation, with its consequent immunity from thyroid poisoning, and keeping in view Kocher's admonition to operate before dilatation of the heart has taken place, operation offers us the best means at our command for the relief of this disease.

Where we have an enlarged gland due to increase of fibrous or colloid elements, accompanied by pressure symptoms or deformity, of course an operation is indicated, the *x*-ray having either no effect, or merely increasing the fibrous elements, and consequently the size of the tumor. In that class of cases, however, in which dilatation of the heart has already supervened or in which we are unable to obtain the patient's consent to an operation, the *x*-ray offers us in a sufficient number of cases either relief or cure, and should be given at least a trial.

FACTS IN CONNECTION WITH DIABETES MELLITUS.

Tyson says in the *University of Pennsylvania Medical Bulletin* for January, 1909, that it is still disputed whether the glycemia, which is the essential antecedent of glycosuria, is the result of increased formation of glucose or its diminished combustion in the blood, and no rational treatment is possible until this is settled. These questions will not be dealt with in this paper. On the other hand, there have been added to our knowledge some important facts which have increased the efficiency of the symptomatic treatment, and with it our power over the disease.

One of the most important of these is the recognition of the condition of acidosis, a term given by Naunyn to "the flooding of the circulation and tissues with acids." Its importance is at once realized when we know that to it is due the fatal diabetic coma which is the terminal event of most

cases of diabetes mellitus. It is to Stadelmann, the discoverer of *B*-oxybutyric acid, that we owe our knowledge that diabetic coma is due to an increased formation of acids, and that oxybutyric acid is the chief of these, though acetic and a few other organic volatile acids may contribute.

The human tissues are able to protect themselves up to a certain point against the toxic effect of the acids by neutralizing them with ammonia, large quantities of which are abstracted from the tissues and excreted in the urine in combination with the acids. In health the ammonia thus excreted is a measure of that introduced with the food. This is true also of mild cases of diabetes in which there is found usually 1 to 1.5 grammes of ammonia in the twenty-four-hour urine, and the relation between the total nitrogen and the ammonia nitrogen is as 10 or 12 to 1, slightly higher figures being explained by the liberal meat diet. In the severe diabetic the ammonia is enormously increased, amounting often to 4 and 6 grammes in the twenty-four hours, and even to 10 grammes or more when coma is threatening. In a case of von Noorden's, where there were 10.5 grammes in the twenty-four hours, the ammonia nitrogen was 45 per cent, almost the total nitrogen, instead of one-tenth as above, although this is unusually large. It has been shown by Stadelmann and others that when the ammonia excreted exceeds that reasonably derived from the food, it may be concluded that the patient is excreting an abnormal quantity of acid; and Magnus Levy calculated that each gramme of ammonia in excess of the amount due directly to the food ingested corresponds to about 6 grammes of *B*-oxybutyric acid. When, however, fixed alkali is given to the patient the ammonia excretion is much reduced. Thus in a case of von Noorden's, without sodium carbonate, the average of four days was 6.9 grammes of NH_2. When 30 grammes of sodium bicarbonate were given it fell to 2 grammes.

On this important fact is based the alkaline treatment of diabetes, which is now much in use, and although the practical results are not altogether those one would be led to expect from theory, they are still encouraging, so that the author now advises that all diabetic patients be put on sodium bicarbonate, either as contained in the pure French Vichy, which is sufficient in mild cases, or when larger quantities are required, a drachm or more three times daily, when it may be added to Vichy or dissolved in water. It is not sufficient to wait until the cases are severe, but the alkali must be given in mild cases as a prophylactic. Still less justifiable is it to wait until coma has set in, for although temporary results of a most astounding character are produced by intravenous and even hypodermic injections of alkali in diabetic coma, these results are not permanent, and the patient relapses and perishes.

It must be remembered, too, that the alkalies do not prevent the formation of acids, but simply make them harmless by neutralizing them. On the other hand, we must not allow ourselves to be too much alarmed by the presence of large quantities of volatile acids in the urine, because it is not the excreted acid but the acid that is retained in the tissues that is harmful, and it may be rendered harmless by reason of free elimination by the kidneys. This is important.

Still it is chiefly by their recognition in the urine that we become aware of the presence at times in the economy of these dangerous substances. Oxybutyric acid, the chief offender, is detected qualitatively and measured quantitatively by methods too complicated to be availed of by the general practitioner without laboratory facilities. But oxybutyric acid is the forerunner of two other substances invariably associated with it, namely, acetone and diacetic acid. These are comparatively easy of detection, and it is therefore not sufficient at the present day to test for glucose only, but we must test for acetone and diacetic acid as well and nearly as often.

A very neat test for acetone is the following:

To 15 Cc. of urine add 1 Cc. of acetic acid and a drop of strong sodium nitroprusside solution. Float on top of this 5 to 10 Cc. of ammonium hydrate. The end-reaction is shown by a beautiful purple at the line of contact, communicated to the urine if the tube is shaken.

Even easier is it to test for diacetic acid by the chloride of iron test. This is done by adding to the urine a 15-per-cent solution of neutral chloride of iron. The first addition may or may not precipitate chlorides. Should it do so they must be filtered out and more chloride of iron added. If diacetic acid be present, it will strike a beautiful Burgundy-red color. This is commonly sufficient to show the presence of diacetic acid, but as a few other possible substances act similarly, a second sample of urine should be next boiled. In so doing any diacetic acid present will be driven off, and if the boiled urine be now tested there will be no response, even if the unboiled urine gave the reaction.

Acetone, diacetic acid, and oxybutyric acid are known as the acetone bodies. Formerly supposed to be the results of glucose metabolism, they are now regarded as by-products of protein and fat. The proteid origin of acetone was first shown by Emberdon and Kalberlah in von Noorden's laboratory, where they produced it by transfusing liver with normal blood. They, too, proved that acetone was derived from protein through the intermediation of the fatty acids, oxybutyric and diacetic, as above stated. The same observers had previously shown that the liver is also the seat of formation of sugar from fat as well as from proteid derivatives. But most important in its practical bearing was the demonstration by Hirschfeld that "when these fatty acids are catabolized in the body without a certain amount of carbohydrate being metabolized with them, the conditions are extremely favorable for the increase of the acetone bodies above their normal amount."

Whence followed another most important practical conclusion, revolutionizing in some respects our treatment of diabetes, but verified by experience, that in very bad cases, so far from carbohydrate food being harmful it becomes actually necessary in order to secure a proper proteid metabolism and prevent the circulating and fixed proteid from breaking up into the volatile acids which contribute to acidosis and diabetic coma. To this end have been constructed various diet tables and diet for certain days, alternating with each other. Thus we have the starch day, the stringent day, the vegetable day, and the oat period arranged in regular order. The terms are not to be interpreted literally. Thus the vegetable day of von Noorden's table does not mean that only vegetables are to be given on that day; nor is it intended that only starch is to be given on the starch day, and that pure proteids only are given on the stringent day. The vegetable day means that vegetables predominate on that day; the starch day is the same as the vegetable, with an ounce of bread added at each meal.

Before elaborating these tables must be mentioned another of the newer facts available in the treatment of diabetes, which is an enlargement of the previously recognized fact that certain carbohydrates are much more easily assimilated than others. This has long been known of sugar of milk and fruit sugars, although it is not true of all diabetics, by some of whom milk is not well borne and still less the fruit sugars. More recently it has been claimed that the same is true of the starch of potato, and one of its advocates (Mossé) holds that of all the starchy foodstuffs potato is the least harmful to diabetics. He ascribes this to the richness of the potato in potassium salts.

Von Noorden holds that oatmeal is even better still, so that these substances are now added in certain amount to a diabetic diet, and the latter has given rise to the celebrated "oat cure" of von Noorden. He makes the striking statement that "many diabetics, particularly severe cases with marked acetonuria, secrete much less sugar when they eat large quantities of oatmeal than when they are put upon the strictest diet which is

as free from carbohydrates as is technically possible."

Von Noorden's oatmeal food consists of: Eight and one-third ounces (250 grammes) of oatmeal is cooked for about two hours on a moderate fire, with three or four quarts of water and a little salt; 100 grammes roborat, gliden, rice albumin, etc., may be added. When the gruel is done add 10 ounces (300 grammes) of butter and pass through a sieve. Divide the whole into eight equal parts and take a part every two hours. The whole amount must be eaten in the twenty-four hours. American and Scotch oats are most suitable.

Tea or black coffee without cream or sugar may be taken on the same day with the above, also red wine and brandy, bouillon, and lemon juice. The oatmeal may be taken hot or cold, and, if desired, fried in its own liquid.

UNNA'S BANDAGE IN ULCERS OF THE LEG, ETC.

HECKER (*Mediz. Klinik.*, Oct. 18 and 25, 1908) has employed Unna's paste since 1886, and finds Unna's original formula the best—that is, zinc oxide, gelatin, ää 4 parts; glycerin, aq. destillat., ää 16 parts (ichthyol 1 part). The leg is thoroughly cleansed with soap in a warm bath, shaved, and the fat removed by rubbing with cotton-wool dipped in ether or benzine. The whole of the leg except the ulcer is then painted by a bristle paint-brush with Unna's paste, liquefied (but not heated) in a water-bath. The ulcer is sprinkled over with a thick layer of airol and covered with cotton-wool, which is also placed round the foot immediately behind the toes and around the leg about a handbreadth below the knee. The heel and ankle are covered with cotton-wool, or, in very sensitive people, with boletus igniarius. Two strong gauze double-headed bandages (that is, rolled from both ends toward the middle to get the necessary pressure) are well wrung out of water and applied, if possible, before the patient leaves the bed. The leg is bandaged from the ankle to the toes and upward to a handbreadth below the knee, the cotton-wool reaching a centimeter higher, each turn of the bandage overlapping the previous one. The second bandage is similarly applied over the first, every turn being drawn equally tight. The leg must be kept horizontal throughout, and the bandage freely exposed to the air until fully hardened. This may be hastened by a hot stove or the sun.

Unna's bandage should be worn some time after the ulcer heals, and be followed by an elastic bandage until the scar is quite consolidated. Hecker leaves the bandage on three weeks, or, later, four to six weeks, more frequent changing being only necessary in cases of unusually free secretion. Some accumulation of secretion does not in any way hinder the cicatrizing of the ulcer if a thick layer of airol, dermatol, or xeroform be present. With these Hecker has never observed idiosyncrasies, as in the case of iodoform. The bandage is cut away with plaster-of-Paris nippers or simply unwound after softening with water, the outline of the ulcer having been sketched on the bandage as soon as hardening occurred. If the surrounding skin is much irritated, before applying the bandage rest and compresses of lead acetate, lysol, chinosol, or these with ice, may be used for three or four days. If eczema still persists, spreading it with Unna's paste usually suffices to heal it. In cases of bad weeping eczema, first apply Lassar's paste (zinc oxide and starch ää 1, vaselin 2).

The chief advantages of Unna's bandage are: (1) Rapidity of healing, a firmer cicatrix being formed than by any other method, after a few bandages; (2) the patient's occupation may be continued undisturbed throughout; (3) enormous saving of expense; (4) if the bandage presses in any place, it may be permanently softened by repeated moistening, instead of cutting it away; (5) the severe pains accompanying ulcers of the leg diminish and disappear; (6) the bandage has a good effect on varicose veins. It is best to first paint these thickly with ichthyol-collodion 1 to 10. Unna's bandage is also very useful in pro-

moting the absorption of effusion into joints, and in the healing of wounds. It is very practical for children, round the neck (after extirpation of glands, etc.), thorax, limbs, especially where these join the trunk, and fingers. After an amputation or excision, etc., the wound is covered with a thick layer of iodoform gauze, a few turns of a small bandage applied, and the whole finger enveloped in paste. The simple method of arresting hemorrhage by means of this bandage forms an important substitute on the battle-field for the dangerous and painful tourniquet.—*British Medical Journal*, Jan. 16, 1909.

CERIUM OXALATE FOR VOMITING.

As the result of an investigation (*Archives of Internal Medicine*, Jan. 15, 1909) upon the effects of cerium oxalate BAEHR and WESSLER conclude that:

1. Commercial cerium oxalate is nontoxic.

2. Cerium oxalate has no inhibitory effect whatever on vomiting of central origin.

3. Cerium oxalate may inhibit vomiting due to local irritation of the gastric mucosa, but only if given in large doses for some time so as to coat the stomach wall pretty generally.

4. Cerium oxalate is not absorbed from the gastrointestinal tract.

These four propositions complete a very close analogy between cerium oxalate and bismuth subnitrate. Both salts are insoluble, and because of this property neither is absorbed from the gastrointestinal tract. This latter fact, in the case of bismuth, has resulted in its use for various local disorders of the alimentary canal, but so far as the literature furnishes any evidence the use of cerium oxalate has been directed in great part against the reflex vomiting of early pregnancy, a condition in which no one could rationally think of using bismuth.

It certainly seems reasonable to suppose that cerium oxalate ought to prove efficacious in alleviating all those conditions for which bismuth is at present used; in other words, those in which a protective coating to the wall of the viscus is desired. In this respect its use is at present extending: for instance, some men find it efficient for relieving the irritability of the stomach in alcoholic gastritis, others for allaying the gastric disturbances that occasionally manifest themselves in the course of infectious diseases.

There is no reason for doubting its value in these and similar conditions, such as gastric ulcer, in which the vomiting is due to a local irritation of the mucous membrane. But in the doses that some men prescribe, 0.15 to 0.20 gramme, it can hardly be hoped that it will prove efficient. In view of the manner in which it now appears that cerium oxalate accomplishes its purpose, namely, mechanically, by coating the wall of the stomach, these doses seem ridiculously small. Cerium oxalate ought to be administered in doses comparable to those in which bismuth subnitrate is given.

RESUSCITATION AFTER APPARENT DEATH.

Death upon the operating table is not a common occurrence, but when it does happen it is of grievous importance. The patient submits to an operation in the hope that some pathological process will be overcome; his family spend the time in anxious waiting for the result, which they hope will prolong the life of one of their number; the surgeon undertakes the manipulation, not, as many people profess to believe, because he is anxious for an opportunity to try his operative skill, but because he hopes to be the means of the realization of these hopes on the part of the patient's family. It is demoralizing, then, for the surgeon to have to announce to the family that the patient has died on the table. It is demoralizing to all connected with the operation. It was in the line of pure philanthropy, therefore, that, in his Mütter Lecture on Surgical Pathology, delivered at the College of Physicians of Philadelphia, Dr. George W. Crile described his method of resuscitating individuals apparently dead.

The patient is placed in the prone posture, and rapid rhythmical pressure is made on the lower portion of the chest, which produces artificial respiration and, to a certain extent, artificial circulation. A cannula is rapidly inserted into an artery and directed toward the heart. To this a rubber tube and funnel are attached, and sterile normal salt solution or Locke's solution or Ringer's solution is poured into the vessel. Other fluids may be used, even to tap water, but the solutions mentioned are preferable. When about a quart of fluid has passed into the blood-vessels, fifteen to thirty minims of a one-to-one-thousand adrenalin solution is injected into the vessel by inserting the needle of the hypodermic syringe through the rubber tubing close to the cannula. Synchronously with this injection the rhythmical pressure on the chest is brought to its maximum, so that the adrenalin solution shall reach the heart promptly. When the pressure within the coronary arteries reaches thirty to forty millimeters of mercury the heart will begin to beat. The cannula is then withdrawn. The saline solution is used for the purpose of filling the arteries so that the adrenalin solution will reach the heart promptly. If, however, there has been much hemorrhage, the saline solution fills the depleted vessels, giving them fluid to circulate. Such a technique must be applied promptly in order to be of service; the operating room staff must be so trained that the materials and instruments may be produced within two minutes after the cessation of respiration or of the heart-beat.

Dr. Crile has applied his method to a number of patients who have apparently died after accidents such as drowning, shock by live wires, etc., and he finds that the human heart responds to the treatment more readily than the hearts of experimental animals. One patient so treated recovered permanently. The method does not destroy the chance of permanent recovery of the patient. It does prevent operative death on the table, and allows the fatal termination to come after the return of the patient to his bed, a much less distressing circumstance. It is, in Dr. Crile's opinion, the best method of resuscitation, excepting the direct transfusion of blood, and including the administration of stimulants, oxygen, electricity, and cardiac massage. Direct transfusion of blood is considered to be a specific remedy in hemorrhage and shock.—*New York Medical Journal,* January 2, 1909.

TOXIC EFFECTS FROM BISMUTH SUBNITRATE.

BECK states his conclusions as to this subject in the *New York Medical Journal* of January 2, 1909, as follows:

Bismuth subnitrate administered by stomach, in small doses, is harmless.

In the presence of certain bacteria in the feces of children bismuth subnitrate will liberate nitrites, which will be absorbed by the intestines and eliminated by the kidneys, and if the production is faster than the elimination, methemoglobinemia will result.

In large doses by mouth it is liable to produce an acute nitrite poisoning, characterized by cyanosis, collapse, methemoglobinemia, and may terminate fatally.

Rectal injection of small doses of bismuth subnitrate may cause nitrite poisoning much quicker and more severe than when administered by mouth.

Children are more susceptible than adults to nitrite poisoning due to administration of bismuth subnitrate.

Persons suffering with intestinal putrefaction are very susceptible to nitrite poisoning when bismuth subnitrate is injected into the bowels.

The bismuth injected into sinuses, and encapsulated, will be gradually absorbed, and may be found in the liver, spleen, muscles, and intestines.

Characteristic symptoms consisting of black borders of gums, ulcerations of mucous membranes, diarrhea, desquamative nephritis, may appear several weeks following the injection of the paste.

After the injection of large quantities of the bismuth paste into suppurating sinuses, mild symptoms of nitrite intoxication may appear.

Acute nitrite poisoning is to be regarded as a distinctly separate affection from that arising from the more chronic bismuth absorption.

Radiographers should employ some other preparation of bismuth than the subnitrate and refrain from injections of subnitrate into the bowels, especially if intestinal putrefaction is present.

FEVER.

In the *Archives of Internal Medicine* of January 15, 1909, MacCallum in writing on this subject, after discussing the details of the metabolism in fever, reviews very briefly what has been said about the whole subject. He finds that in fever we have a reaction which is occasioned by a variety of injurious influences acting on the body, a reaction which is characterized by a moderate increase in the oxidative processes, and consequent moderate increase in heat production, but more especially characterized by such changes in the heat regulation as lead to disproportion between the heat production and the heat loss, and a consequent rise in body temperature. The disturbances in metabolism are found to consist not especially in the oxidation of non-nitrogenous substances, which are predominantly concerned in health in the production of heat, but in much greater degree in the destruction of protein material, not the protein of the food exclusively, but in a preëminent degree the protein of the tissues. The destruction and oxidation of carbohydrate and fat goes on in fever also, possibly to a greater extent than has generally been supposed.

The changes in mineral metabolism are as yet but imperfectly understood, but it appears that, in the course of fever, water and certain mineral salts are at times retained in the body only to be excreted later when the febrile process is over. On the whole, the change in metabolism is not one particularly marked by its intensity, but rather by the peculiar proportions in which the materials are concerned, and the formerly accepted idea that we have to deal with a greatly increased oxidation is upheld neither by the amount of heat production nor by the quantity of oxidation products resulting. It seems from the constancy of the characters of the febrile reaction, no matter what the exciting cause of the fever be, that we cannot regard it as the mere effect of the injurious agent on the passive body, but must rather look on it in the light of an elaborate modification of the chemical processes evolved in the course of centuries of development to answer some special purpose. It seems probable that every detail of this reaction is that which is best calculated to take its own special part in the making up of a whole well-aimed plan. Every available mechanism coöperates to the uttermost of its power in the first stage to elevate the temperature of the body; when that temperature is once brought to a suitable level, many of these mechanisms are no longer necessary, and when the febrile temperature itself is no longer needed other mechanisms are equally active in discharging the heat.

The aim of the individual peculiarities of metabolism is not so easily grasped, but it is here again quite as difficult to escape from the conviction that they are designed to play their part in the general plan, and because this reaction has developed in the long processes of evolution, it seems inevitable that this plan is one devised for the good of the organism, and that fever is in its essentials a protective reaction. This idea is not by any means new, but has prevailed for centuries, being lost throughout whole periods in the struggles of physicians to cure the fever regardless of the disease, and it is only in recent years that it has again become usual to think of the fever as probably a beneficial reaction which should not be interfered with.

Some light has been shed on this by the controversies regarding the usefulness of antipyretics, about which a very considerable literature has sprung up. In just what way the fever acts beneficially it is almost impossible to say in the present state of our knowledge, but the recent studies of the

development of immunity, which show that when the tissues are attacked and injured they react by developing an immunizing substance, probably offer a general explanation for the type of reaction with which we are dealing, which agrees in so many particulars with the behavior of the organism in the known development of immunity. The very facts that when the injury is overwhelming we may have no febrile reaction, and that when the course of the intoxication suddenly changes to the advantage of the organism the fever ceases, point to a close analogy between the febrile process and the process of the production of immunity. Why the heightening of the temperature of the body should be necessary is not perfectly evident, but it is easy to believe that under those circumstances the production of immune substances might proceed in a way impossible at a lower temperature.

In conclusion, then, the writer states that he can only express his conviction that the febrile process is a reaction beneficial to the organism and doubtless intimately associated with the development of protective substances to combat the injurious agencies which have invaded the body.

RESULTS OF THE APPLICATION OF CARBON DIOXIDE SNOW.

HEIDINGSFELD and IHLE in the *Lancet-Clinic* of January 30, 1909, remind us that carbon dioxide snow is specially well adapted for the removal of pigmented and selected types of vascular nevi. It is not particularly efficacious in removing tattoo marks, and possesses a doubtful and, in the experience of the authors, rather a negative value in the successful treatment and permanent cure of lupus erythematosus.

It commends itself for certain forms of senile keratoses and degenerations of the skin. It is still a remedy of too tentative a character to commend itself as the method of choice in epitheliomata, common and venereal warts, lupus vulgaris, leucoplakia, lichen planus, and a host of other cutaneous affections. They assert, however, that carbon dioxide snow is an agent that commends itself to every dermatologist as a therapeutic agent of unquestioned merit, worthy of an indispensable place in dermatologic practice.

HYPERSUSCEPTIBILITY TO TUBERCULIN IN TUBERCULOSIS: ITS PHYSIOLOGICAL AND CLINICAL IMPORTANCE.

In the *Yale Medical Journal* of February, 1909, BALDWIN reaches the following conclusions in regard to this matter:

1. Tuberculin hypersusceptibility is a phenomenon that distinguishes a tuberculosis infected individual from one who is sound.

2. It is characterized by a prompt inflammatory reaction in the tuberculous individual to reinfection, or to contact with tubercle bacilli and their products.

3. The reaction has analogies to those of other diseases, notably glanders and serum disease.

4. It includes a principle originally called anaphylaxis, or acquired susceptibility to proteins, which has been best studied in connection with serum and egg protein.

5. The best explanation for the latter associates it with the breaking down of protein molecules, some portions of which act as a poison to vitally important nerve centers, which have developed a strong affinity for it.

6. Tuberculin hypersusceptibility is ordinarily not acquired from injected tuberculin solutions, but from prolonged contact of the tissues with the tubercle bacilli itself —*i.e.*, in tubercles.

7. Under exceptional conditions it may be acquired without the formation of tubercles.

8. The sensitizing substance in tuberculosis has been transferred from one animal to another under special conditions.

9. The heat-regulating and respiratory centers are sensitized, but the cells surrounding the tubercles are predominantly affected.

10. In a physiological aspect the phenom-

enon is one of relative immunity, and is called "allergie" by von Pirquet, meaning changed reaction powers.

11. In its normal activity, allergie probably repels infection and conserves life by localizing disease.

12. In overactivity it causes grave toxemia from the destruction of bacilli in the body, which may in turn result in loss of allergie.

13. In its clinical aspect it is valuable in diagnosis, provided symptoms of the disease are present.

14. The cutaneous tuberculin test is to be preferred to all others, but in case of failure resort may be had to the subcutaneous method.

15. The conjunctival test has no marked advantages and is occasionally harmful.

16. Tuberculin treatment may have two different objects in view—the first to maintain allergie, the second to abolish it.

17. Both conditions appear useful in aiding recovery, the one by stimulating the local focus, the other by removing danger of toxemia.

18. Scrofulous skin affections and febrile symptoms are often indications of excessive hypersusceptibility; likewise are the cutaneous tuberculoses, such as lupus.

TREATMENT OF AMEBIC INFECTION.

SAUNDERS in the *Medical Record* of February 20, 1909, gives positive advice for the treatment of amebic dysentery. He asserts that in order to reach the deeply seated amebæ the most logical method is systemic treatment, and in the few cases which the author has had, some twenty in number, he has gotten good results from the administration of *Chaparro Amargoso*. His favorite was the administration of the fluid extract, because of its convenience, in drachm doses, every three or four hours. Yet he has had cases that did not yield to this, but responded to infusion of the bark and stems. This is the way the Mexicans use it. Some also include the bark of the root—in other words, making an infusion of the whole plant. This is a bitter mixture, but it is as good medicinally as it is bad in taste for amebic troubles. The infusion is drunk freely three times a day before meals, the treatment usually lasting from three to twelve months. This not only checks the dysentery, but will cause small hepatic abscesses to become sterile, and under continued use their disappearance should be looked for. Large abscesses are, of course, to be treated surgically.

Dr. Edward Randall, Professor of Therapeutics in the University of Texas, in answer to a query, said: "It is by no means a specific. I still not infrequently give it in drachm doses every three or four hours, and sometimes get very excellent results."

The reason why we do not always get good results the author thinks well given by Dr. Allen J. Smith, Professor of Pathology at the University of Pennsylvania, formerly of the University of Texas, in answer to a similar letter of inquiry: "I have seen numerous cases rapidly improve and become well and remain well after the use of the drug—best, apparently, when given in infusion of the plant. But I have also seen cases or been told of cases where its administration was of no avail, and not even productive of temporary benefit. I have not had any such in my own experience, but good men have told me of the failure, and as you know my personal experience in the treatment of such cases has necessarily been a limited one. I think the explanation of the failure in such instances lies in one of two lines—either (and this I have had reason to suspect) the medicine was a poor preparation or was given improperly, and that in some cases the amebæ were of little importance in the dysentery, the disease being more likely a bacillary dysentery, with the amebæ either accidentally associated, or if of any pathogenic significance, only of minor importance. Those cases which it does suit seem to yield as fully and readily as does malaria to quinine. I personally would employ it, in the infusion preferably, in all cases of dysentery when the amebæ are found. If I did not quickly see a good result I would

conclude that the case is not a typical amebic form, and would at once employ other measures."

The resinous principle discovered by J. L. Putegnat, of Brownsville, Texas, and named by him "amargosin," has not been fully investigated; and our ability to go into the open market and get the drug of known therapeutic activity has been unsatisfactory.

The author hopes this brief paper may stimulate those who have to deal with this important and dangerous disease to take the matter up with some responsible pharmaceutical house to furnish them a preparation of the drug which is not inert, but pharmacologically active and up to the standard, so that they may thoroughly test its virtues on this one of the most dreaded scourges of some tropical countries.

THE DIET IN TYPHOID FEVER.

In the course of an article on this subject in the *Buffalo Medical Journal* for February, 1909, LEVY tells us that his experience with a mixed diet in typhoid dates from the fall of 1906. Since then he has treated 24 patients sick with typhoid in the wards of the Hospital of the Good Shepherd and in private practice after this manner.

His first patient was a nurse. For the first two days she was on a fluid diet. She was exceedingly nervous and irritable. She absolutely refused to take milk. She was kept in bed with difficulty and did not sleep well. They anticipated a great deal of trouble, as in every way she promised to be a difficult patient to handle. He then allowed her bread and butter, custard, boiled rice, and soft-boiled egg, and later chicken and broiled steak. From the moment she was allowed solid food there was a complete change in her behavior. The nervousness and irritability disappeared. She looked forward to her meals with a great deal of interest, and the subsequent course of the disease was uneventful. She left the hospital at the end of six weeks, and in two more she resumed her work as nurse, apparently none the worse for the illness. For the first few days the author watched the experiment with trepidation, and at all times it seemed strange to see a typhoid patient with a temperature of 104° eating bread and butter, chicken, and beefsteak with impunity.

All of his 24 patients so treated recovered. There was not a single case of perforation or severe hemorrhage. There were three relapses; otherwise, complications were conspicuous for their absence. Not all of the patients were kept on the same diet, nor was there any attempt at forced feeding. The individual rather than the disease was treated.

As soon as the patient admits that he is hungry and expresses a desire for food, it is allowed. The presence of fever in itself is never a contraindication. The quantity of food is gradually increased, and the effect watched, and if for any reason it is deemed advisable, the quantity as well as the quality is changed.

Great care is necessary in making any material change in the regimen of a patient kept on a fluid diet for several weeks or more. The digestive organs, like the rest of the body, owing to the low diet are in a much reduced state, and cannot respond to any sudden demand made by an increase either in the quantity or the quality of the food. A rise in temperature may follow these indiscretions. Formerly such elevations of the temperature occurring during convalescence were supposed to mean that solid food was given too early, and that a relapse had occurred. In reality it only meant that the unnecessarily weakened digestive organs could not resume their full functions without gradual training.

There is a marked difference in the appearance of the fed patients and those kept on a liquid diet. The former are more comfortable; the tongue is clean. There is an absence of the apathy and indifference so characteristic of the disease. The patients anxiously look forward to their meals, and do not exhibit the typhoid state. Physicians visiting the wards are

surprised at the appearance of the patients, and admit that they never before had seen such comfortable looking typhoids.

Not only is the patient more comfortable during the course of the fever, but the period of convalescence is shortened. Having lost less, there is less to regain. The resistance of the patient being better, he is less likely to fall a prey to the secondary infections so common with typhoid. And lastly, the patient is able to resume his or her occupation much earlier—a consideration of no small importance, especially to the working classes.

The author fully realizes that in so variable a disease as typhoid it is dangerous to draw conclusions from a few cases. However, he is of the opinion that there is already sufficient evidence to warrant the belief that the profession has been responsible for considerable unnecessary suffering by adhering to too strict a diet in typhoid. A more liberal dietary apparently seems to diminish rather than increase the mortality and complications.

OPERATION FOR RECTAL CANCER.

WHEELER (*Lancet*, March 6, 1909) thus describes the technique of rectal enucleation suggested by Alexander of Montreal. The operation is performed entirely through the abdomen. The colon is divided not lower than the level of the sacral promontory, and free mobilization of the proximal end permits of it being brought to the anus without sufficient interference with the blood-supply to cause necrosis. It is this mobilization of the pelvic colon which is the key-note of the fulfilment of two of the conditions previously mentioned for an ideal operation—that is, a division of the bowel as high up as the glands are likely to be involved (in most cases this limit being at the promontory of the sacrum) and the avoidance of the cosmetic disadvantages of an artificial anus.

With a patient in the Trendelenburg position and an effective automatic retractor placed in an ample median incision this mobilization becomes a matter of the greatest ease and is carried out in a manner similar to the freeing of the duodenum in Finney's operation of gastroduodenostomy or in retroduodenal removal of gall-stones. Mobilization must be free; any niggardly attempt to save the blood-supply defeats its own object, for if the colon is brought down under tension from above the pull on the vessels may partially obliterate their lumen. The upper portion of the rectum is a danger zone, for here the vitality of the bowel depends on a couple of small branches if the superior hemorrhoidal be divided, or if that vessel be saved and tension result from the manipulation to make both ends of the gut meet at the anus its anatomical position above closely applied to the sacrum renders the possibility of it becoming compressed against the promontory a likely mishap. These misfortunes can only occur if the rectum is divided in the situation generally adopted in transacral operations; if a higher division is made the circulation is undoubtedly less interfered with. In removing cancers of the pelvic colon the inferior mesenteric itself can be ligated at its origin without fear, during the removal of the gland-bearing area.

When the pelvic colon is divided at the sacral promontory in cases of cancer of the rectum the superior hemorrhoidal and sigmoid vessels are ligated at their origin with the certainty that the loops of vessels placed at the junction of the colon and mesocolon will be supplied freely by collateral vessels anastomosing from the superior mesenteric and left colic arteries. Mobilization is effected by splitting the peritoneum in the iliac fossa as far upward on the left and parallel to the mesocolon as may be necessary. The colon and mesocolon are lifted bodily out of the abdomen from the posterior abdominal wall. In the Trendelenburg position the ease of this maneuver can only be appreciated by those who have tried it. In the downward direction the peritoneal incision is carried in the pelvis to the cul-de-sac and then transversely

across the rectum. Alexander suggested division of the bowel before mobilization of the upper segment. Wheeler thinks for obvious reasons the reverse procedure is better.

After complete mobilization and ligature of the superior hemorrhoidal vessels, or if necessary the inferior mesenteric, the bowel is divided, preferably with the cautery, not lower than the sacral promontory. The lumen of both segments is then crushed and closed. The lower segment is caught in a forceps, such as Kocher's goitre forceps, and pulled forward. The superior hemorrhoidal artery, if not already divided, is now put on the stretch and ligated. Blunt dissection lifts the rectum from the sacral wall, and not much trouble is experienced in freeing it from the bladder in front. The middle sacral artery can be ligated as it lies on the sacrum if desired; the rectum can now be grasped by a clamp or ligatured below the growth at the pelvic floor and divided a couple of inches above the anus. This is a moment when great care must be exercised in technique to prevent infection. The anal canal is now turned inside out by an assistant grasping the mucous membrane with forceps in several places, and finally a long forceps is passed to pull the upper segment through the anus and the operation completed.

On account of the difficulty which might be experienced occasionally in dividing the bowel from the abdomen two inches above the anus, a useful alternative would be, after the colon had been mobilized, to place a ligature round the gut as a landmark above the level of the promontory, and having detached the peritoneum and mesocolon and cellular tissue in the affected area, to close the abdominal wound and to luxate the growth through a perineal incision. The operation could be then completed by dividing the colon above at the site of the ligature and as low as the safety of the sphincters would permit through the perineal incision. The union is made as before by extroversion of the anal canal, but with much more facility. This would, no doubt, be a more rapid manner to conclude the operation in many cases.

Another alternative is for the assistant after mobilization, as suggested by von Bergmann, to pass a forceps through the anus, to grasp the growth, and to pull the colon inside out, making an intussusception; the operation would then be completed outside the anus. This method fulfils the conditions of avoiding a sacral or artificial anus and probably would be attended with a small immediate mortality, but the remote results are not so good, for the gland-bearing area could scarcely be removed *en bloc* with the bowel, nor could the level of division of the latter be accurately ascertained.

In conclusion, with regard to the preparation of the patient: (1) A thorough washing out of the colon with hydrogen peroxide for a few days and a hypodermic injection of morphine the night before operation will suffice for early cases without much obstruction. (2) For more obstructed cases exploration should be made through an incision on the right side, with a view of performing appendicostomy and to ascertain if the case is operable. Through the opening thus made in the appendix the colon can be thoroughly cleansed for a few days prior to the major operation and the closure effected painlessly at any time by dissecting out the mucous membrane with a tenotome. (3) And lastly, in badly obstructed cases a preliminary colostomy on the right side with all its disadvantages must be performed.

THE PRACTICAL APPLICATION OF SERUM DIAGNOSIS IN SYPHILIS.

HALBERSTAEDTER *(Berliner klinische Wochenschrift,* Jan. 25, 1909) has conducted a clinical research having for its end the determination of the value of the serum reaction as a diagnostic means in cases of latent or late syphilis, or when the manifestations of the disease are well controlled by mercury. Of 231 cases 31 were clinically free of syphilis, nor had they a history suggesting it. They all gave nega-

tive reactions. The remaining 200 cases gave a quite clear syphilitic history. Nine exhibited the primary lesion and 8 gave a positive reaction. Fifty exhibited secondary lesions and 49 gave a positive reaction. There were 37 cases of latent syphilis in the early period; 17 gave a positive reaction. There were 16 cases exhibiting gummata of the skin, mucous membrane, or other organs, and all gave a positive reaction. Four cases exhibited syphilitic disease of the internal organs; three gave a positive reaction. There were 82 cases of latent syphilis in the late period; 23 gave a positive reaction.

Though this reaction is helpful in framing a diagnosis, it is of little prognostic or therapeutic value. It is also observed that a diagnosis of syphilis can never be made in the test-tube since other diseases give similar reactions. Among these are mentioned frambœsia tropica, lepra, malaria, and scarlet fever.

THE MORTALITY IN ONE THOUSAND OPERATIONS FOR GOITRE.

C. H. Mayo (*Surgery, Gynecology and Obstetrics,* March, 1909) observes that in conquering serious diseases by surgical measures it is important that the operation itself should be as free from mortality as possible. In the early surgery of goitre in this country the mortality was high in a number of cases operated on, as usually the operations were of great urgency or necessity and only the very worst types were sent to the surgeon. These were often in a nearly moribund condition, after the delay of a long-continued and oft-changed medication.

Operations upon colloid, simple, or diffuse adenomata, and upon encapsulated adenomata, as a rule involve but slight risk to the life of the individual. Many patients who are so afflicted wish to be relieved of the deformity, tracheal pressure, and hoarseness, or possibly a severe neuralgia. But from the examination of a large number of varied tumors of this nature, we must say that despite the enormous discomfort and suffering with which the disease may be accompanied, actual death occurs but rarely, and then only from intrathoracic or from malignant or degenerative change in the gland. The Mayos have had a number of large goitres exceeding 20 inches across the front of the neck and tumor from one side to the other. One tumor measured 31 inches in circumference, including four inches of the back, the only free portion of the neck.

In their series of cases there were in all 574 cases of simple, colloid, or diffuse adenomata, including encapsulated goitre, adenoma, and cystadenoma; also four operations for accessory thyroids in the lines of development, one being a lingual thyroid. All were treated by extirpation or enucleation. Two operations were incisions and drainage of acute inflammatory conditions. There were four deaths in this series, one being from lobar pneumonia on the eighth day, another from two severe delayed hemorrhages, one from shock in which there was found brown atrophy of the heart and fatty infiltration of the liver with gall-stones, and one from septic pneumonia on the fourth day.

In another great class of cases the term "hyperthyroidism" is used because it best describes a condition which manifests such varied symptoms, and it is probable that earlier relief will be given to many who are now treated for heart disease, nervous disease, gastric crisis, and intestinal toxemia, until a projecting eyeball or goitre becomes sufficiently prominent to attach the label of Parry's disease, Graves's disease, Basedow's disease, or exophthalmic goitre to the unfortunate individual, who must then run the gauntlet of the enormous variety of therapeutic agents which are good for the disease when properly christened.

It is quite probable that many cases of hyperthyroidism never progress beyond the early stages and are not diagnosed as such, and it is probably true that many cases in advanced stages of the disease get well with, without, or in spite of treatment. The Mayos believe that one-fourth the number

do so. Yet in hyperthyroidism, Ewings, MacCallum, and especially Wilson's report of 294 cases, show a definite change in the structure of the glands in this type of disease, and the results from the reduction of secretion are certainly almost marvelous.

In the Mayos' early surgical work in hyperthyroidism, beginning some fifteen years ago, only the most desperate cases were thus treated, and they considered results up to the average which gave 25 per cent mortality in the first 16 cases. One of these fatalities occurred on the table. Better judgment in selecting a favorable moment for operation, with more careful preliminary preparation of the patient, resulted in but three deaths in the next 40 operations for the disease. In this connection during the last two years six cases coming to them from a distance died a medical death between the fourth and ninth day after reaching the city, their inoperable condition being recognized because of former experience. Fortunately they were able to compare the autopsy reports of these cases with conditions which were observed in deaths following surgical procedures upon the gland. In all of those who died the reports were to the effect that there was degeneration of the heart muscle, fatty liver, soft spleen, and chronic nephritis, and usually enlarged thymus. One very marked case dying without operation on the fifth day, under observation had no palpable thyroid gland, yet the autopsy showed it to be enlarged and weighing over three ounces.

The various degenerative changes in the gland, with increased cell activity, have explained why in advanced and delayed cases, with what might almost be called "terminal degenerative conditions," the mortality is not only increased, but also why a satisfactory cure does not follow in many instances where great operative skill has avoided mortality. Such cases should be compared to the removal of a bullet from the body with the expectation of obtaining relief from all injury caused by its passage.

There were 40 cases of marked hyperthyroidism operated upon, with 19 deaths. Most of these were treated by extirpation of one lobe, usually the large right and the isthmus, and sometimes a part of the left being removed. Occasionally an adenomatous condition could be enucleated. In the early stages of the disease very mild cases were treated by ligating arteries and veins at both upper poles, which represent about one-fifth of the ligated cases. Nearly all of the others operated upon in this manner were the worst possible type of cases which could be chosen, and the operation was done only as a preliminary treatment in preparation for the removal of a portion of the gland later. In the most aggravated cases in which there is dilated heart, adenoma, and ascites, preliminary preparations were frequently prolonged for several weeks before the operation could be undertaken. These patients improve quickly under the various forms of treatment, such as medication, *x*-ray, rest, etc., but they may also fail rapidly.

In operating it is needful to avoid periods of gastric crisis or intestinal relaxation, and the operation may be postponed several times waiting for a favorable opportunity. Some form of operation may be considered beneficial which has for its object the reduction of secretion, either by lessening the circulation by ligation of the vessels, or by removal of a portion of the gland.

There were 97 cases of hyperthyroidism treated by double ligation of the superior thyroid arteries and veins with one death, and 14 cases of ligation of the superior thyroid and veins of the remaining lobe after extirpation of one lobe and isthmus were found to have improved the patient, though not to a satisfactory extent. There were 295 cases of removal of more or less of the gland, with 18 deaths, seven of which occurred in the first 46 operations. One of these deaths occurred on the table from shock, 15 from hyperthyroidism, nearly all within twenty hours after operation, two from embolism, one pulmonary and one cerebral.

After all has been said concerning the various dangers from operating for ordinary adenomatous goitre, Mayo regards hemorrhage, either primary or delayed, with the efforts made to control this usually accidental condition, as the prime cause of death. Delayed hemorrhage occurs usually from including some muscle fiber in the ligation of the superior thyroid artery. Fortunately patients operated upon for the various forms of adenomatous goitre are almost always able to withstand serious hemorrhages. The occurrence is far more serious in the extreme cases of exophthalmic goitre with degenerated and dilated heart and other complications associated with such conditions, although hyperthyroidism, with a continuance and increase of all symptoms, is usually the cause of death in this latter form of the disease.

As to the dangers from injury or removal of the parathyroids, Mayo believes that with ordinary precautions, and with the modern operation, such a result may be expected about as often as pulmonary embolism may be looked for in abdominal surgery. The danger of such injury will seldom occur in operating for exophthalmic goitre, but care must be exercised in preserving the posterior capsule in the operation upon colloid goitre in which both lateral lobes of the thyroid are attacked at the same or separate periods.

Cancer and sarcoma of the thyroid are most serious conditions. In the early stages of both a cure may be possible, but it will usually be in the unsuspected case. Cancer of the thyroid which has progressed so far as to be readily diagnosed is practically incurable. Inasmuch as goitres of long standing may become malignant, and that in such cases the change is usually accompanied by rapid irregular growth of a long stationary gland, as a rule with loss of weight and other symptoms of irregular hyperthyroidism, it is proper to state to individuals thus affected that an operation should not be long postponed.

In the series there were 18 cases of cancer with one death, which was occasioned by tracheal collapse from softening of the rings, and two cases of sarcoma with no mortality. There were fully half as many patients with malignant thyroids who appeared too late to derive any possible benefit from a surgical operation, and it was not therefore advised.

In the after-care of patients, all but the simplest cases receive a quart of saline rectal enemata given very slowly after the operation. This is repeated in a few hours, and in extreme cases again ten hours after operation. Should there be intestinal relaxation, as in extreme cases of Graves's disease, subcutaneous use of the saline is substituted for the rectal method. Morphine is employed for extreme restlessness. Cold over the pericardial region in marked palpitation seems to be of benefit, and if exhausting perspiration is a symptom, it is controlled with repeated small doses of atropine.

The anesthetic given had been ether, preceded by atropine 1-120 grain and morphine 1-6 grain. Only 20 odd operations were made under cocaine anesthesia.

HUMAN GLANDERS.

BERNSTEIN and CARLING *(British Medical Journal,* Feb. 6, 1909) report in considerable detail six cases of human glanders, and from their study observe that there is but one factor common to all six, namely, an occupation bringing the individual in more or less connection with horses. In all but one there was in addition a degree of prostration quite out of proportion to the clinical signs. In three of the cases diagnostic injections of mallein were employed. In all a typical reaction followed. In two instances injections of tuberculin were given as controls, but in neither was there any response. In several cases which turned out not to be glanders the mallein test produced no reaction, including one case of generalized tuberculous subcutaneous abscesses, which did give a typical "tuberculin reaction."

The dose usually given was 10 to 15

minims, and was followed in a few hours by a typical rise in temperature with pain at the point of injection and at the site of the lesion.

For practical purposes animal inoculation is the most reliable diagnostic procedure. In four of the cases reported it was tried with positive results, and in one the diagnosis was not arrived at until this was done, it being impossible to isolate any characteristic organism from amongst so many contaminating bacteria that occupied the ulcerated surface. In these contaminated cases it is better to inoculate an emulsion of the suspected tissue subcutaneously into the abdomen of an adult male guinea-pig. If inoculated intraperitoneally the contaminating germs may cause death from peritonitis before the characteristic enlargement of the testes with acute inflammation and engorgement of the tunica vaginalis can be produced. The reaction was noticeable in seven to ten days as a rule. In some few cases it was delayed for several weeks. In others it had not been obtained at all. It is advisable to make cultures on potatoes simultaneously with the animal inoculations. The animals selected should be adult males and varying doses should be inoculated. B. malleoli are generally very scanty; even in acute abscesses it may be impossible to find them. Hence if the pus of such an abscess is found to be sterile a glanders infection should be borne in mind. In contrast to the difficulties of bacterioscopic diagnosis the cultural characteristics are so definite and so constant as to render the diagnosis simple. Smears of pus, which is generally uncontaminated in unopened abscesses or farcy buds, on glycerin-agar produce in twenty-four hours a gelatinous confluent growth, and on potato a brownish growth in forty-eight hours, which later darkens, and after some time may become of a chocolate tint.

As to the mode of infection, the hypothetical paths are by direct inoculation through the wound, through the hair follicles, by inhalation or by ingestion. Wound infection is conclusively proven by laboratory accidents. Indeed, glanders has been assigned as the most frequent cause of accidental death amongst laboratory workers.

To find a peculiar gelatinous pus in an abscess occurring in a patient whose occupation and illness had already aroused a suspicion of glanders would be confirmatory, but in itself this phenomenon cannot be regarded as of high importance.

Stress should be laid upon this because a common termination of a chronic case is, in an acute outburst, fatal from its inception.

Glanders exhibits protean symptoms. The distinction from syphilis and tuberculosis is extremely difficult. Glanders is more rapid than tuberculous lesions and exhibits, moreover, a tendency to spontaneous healing. The distinction between chronic glanders and syphilis cannot readily be made, since of all drugs vaunted in the treatment of glanders mercury is the only one for which success can be claimed with any show of reason.

SERUM DIAGNOSIS OF SYPHILIS.

BUTLER *(Chicago Medical Recorder,* No. 3, 1909) writing on this topic thus sums up the significance of the reaction as regards therapeutics:

If we are to accept the reaction when positive as an indication of activity of syphilis, then it follows that a positive reaction is an indication for antisyphilitic therapy.

On the other hand, we cannot consistently advise its interruption with the disappearance of the reaction because we know that the disappearance of the reaction and likewise of all specific manifestations may be followed in a shorter or longer time by the reappearance of both. The writer does not believe that we are to be justified in awaiting the reappearance of the reaction before resorting to a systematic periodic antiluetic treatment in a case of syphilis, because the point should be kept in mind that this, like many other immune-diagnostic recourses, may at times fail.

The reaction has emphasized one point, however, and that is not to wait the appearance of external manifestations before instituting treatment, that syphilis is not cured even when the skin and mucous membrane lesions have long since ceased to appear.

In the present light of our knowledge of syphilis it would seem that intelligent management of syphilitic cases not only demands clinical judgment, but a far more important factor, namely, the serum reaction for syphilis. Irrespective of absence of all external luetic manifestations, the serum reaction is an indication for antisyphilitic treatment.

THREE YEARS' EXPERIENCE OF BUTLIN'S OPERATION FOR CANCER OF THE MOUTH.

PAUL (*Liverpool Medico-Chirurgical Journal*, January, 1909) notes that Butlin has laid down definite lines on which operation for cancer of the tongue should be conducted. He has supported his views by such improved statistics that the conviction must have been brought home to all surgeons who read his lectures that he had achieved a notable advance in the surgery of malignant tumors in this region.

The operation advocated involves not only the thorough removal of the primary growth, but a complete dissection of the entire anterior triangle of the neck from clavicle to jaw, clearing out the whole of its contents down to the bare surface of the great vessels and muscles. This is an extensive operation, and if undertaken at one time the whole of the large wound becomes infected from the mouth, rendering the operation very serious and not rarely fatal.

Mr. Paul therefore operates in two stages. First the primary growth is removed with a good margin of healthy tissue; and in about a fortnight the neck dissection is carried out.

With the object of leaving the neck intact for the second operation the primary proceeding is confined entirely to the oral cavity; but if, for reasons of its size or the involvement of bone, this is impossible, then either Kocher's or Syme's incisions give greater access. Occasionally preliminary laryngotomy is also of advantage to the operator as well as the anesthetist, but in those difficult cases involving the anterior pillar of the fauces, no incision is so good as that which splits the cheek, and is curved across the angle of the jaw right up to the edge of the sternomastoid. In this operation the jaw is sawn in the same line, and it is imperative to remove the glands (submaxillary and carotid) at once. This increases the danger of the operation, and convalescence is protracted on account of the bone involvement, but still it is usually well borne in good subjects. For growths about the epiglottis (fortunately rare) this incision gives excellent access.

At the end of two to three weeks the "Butlin" should be carried out. This must be done efficiently and on both sides when the disease is in the middle line. Of course, it is hard to press a third operation on a patient, but Mr. Paul has come to the conclusion that it is essential. One of his cases shows that some twelve months after a "Butlin" on the left side, following the removal of a left-sided epiglottal growth, there was noticed some enlargement of the glands on the right side of the neck. This enlargement had followed an attack of influenza, and on exploration the enlarged carotid gland was found to contain pus. In one spot, however, a small patch of hard white infiltration was to be seen, and this on examination proved to be epitheliomatous. It was no doubt present when the primary growth was removed, and by not doing the Butlin on both sides, as ought to have been done, he went away with a seed which must have been fatal if it had not been brought to light by an attack of influenza, before, however, any fresh growth had taken place.

In doing the actual operation suggested by Mr. Butlin, one must leave the great vessels and the muscles absolutely bare, entirely remove the submaxillary salivary

gland and the lower portion of the parotid, for only in this way can every trace of cellular tissue and all the lymphatic glands be efficiently removed. The operation is well borne by patients of seventy years of age, and is really much less serious than the primary operation in the mouth.

The details of the cases follow, and in conclusion Mr. Paul states that the impression on his mind for the three years' experience of Butlin's operation is entirely favorable, and he warmly advocates its general acceptance as a routine practice. In principle it is not, of course, new; the important point is the recognition of the fact that a definite plan of campaign must be followed if the enemy is to be successfully routed, and therefore, with very few exceptions, in cases of cancer of the skin, mouth, penis, scrotum, anus, labia, larynx, breast, and parotid, one should accept as a necessary part of any curative operation a properly planned dissection for dealing with the probable tract of secondary infection.

Paul has operated in the last three years on 35 cases—three of the lip, three of the cheek, one of the palate; tongue, 28. Eleven of these were favorable cases; 15 were advanced cases; nine involved the bone. In the favorable cases nine remained free from recurrence, one died from operation, and one could not be traced. In the 15 advanced cases eight were free from recurrence, five died of the disease, and one recurred but was still living, and one could not be traced. Of the bone cases none were free from recurrence.

TRIGEMINAL NEURALGIA AND ITS TREATMENT BY SCHLOSSER'S METHOD.

STEWART (*Clinical Journal*, March 17, 1909), after some preliminary remarks on tic-douloureux and the formal operation adopted for its relief, takes up in some detail the subject of injections into the affected nerve trunks at their foramina of exit from the base of the skull close to their emergence from the Gasserian ganglion, and notes that such treatment produces temporary pain for a few minutes, which may be largely mitigated by the addition to the alcohol of a small amount of cocaine. This pain is followed by anesthesia of the affected nerve area for several days, together with freedom from the old pain. Though the anesthesia passes off, the pain does not return, and the period of relief after such injections, according to the statistics of 123 cases treated by Schlösser, averages between ten and eleven months, and is sometimes much longer. The injections can then be repeated. Each relapse is milder than the previous attacks and the intervals become longer.

Kiliani, of New York, has published a large number of cases treated by the injection of 80-per-cent alcohol, whilst Patrick and Hecht, of Chicago, prefer a solution of 5-per-cent alcohol containing cocaine. Their formula, which is the one employed by Stewart, is as follows: Cocaine hydrochlor., 1 gr.; chloroform, 10 m.; alcohol absolut., 3 drachms; aq. destill., to ½ oz. Of this solution 2 cubic centimeters is injected at a time.

The technique of the injection is as follows: A stout needle, 10 centimeters long and 1.5 millimeters in diameter, is used. Within this is fitted a blunt stilette whose point projects slightly beyond the sharp end of the needle. The needle is marked off in centimeters up to 5 centimeters, so that we may know at what depth the point is. In making the injection through the skin (previously disinfected, and frozen by chloride of ethyl) the stilette is slightly withdrawn, so that the sharp point of the needle pierces the skin easily. When the point is through the skin, the blunt stilette is pushed home; thus the rest of the penetration is done with a blunt-ended instrument and no injury is done to the deep vessels. When the end of the stilette has reached the foramen in the skull, at the proper depth, the stilette is completely withdrawn; a glass syringe, ready filled with the solution, is fitted to the needle, and the injection is slowly made. The needle is left *in situ* for a couple of

minutes and then withdrawn. There is usually no bleeding, or if any, it is so trifling that it is quickly stopped by pressure. The needle puncture is covered with collodion, and the whole affair is completed within a few minutes. A general anesthetic is not required; in fact, it is desirable not to use one, for when the injection is successfully made into the trunk the patient feels a burning pain along the distribution of the nerve. If cocaine be added to the alcohol, this pain passes off quickly, and is followed by anesthesia.

Certain minor complications may be associated with injections of this sort. For example, slight edema of the eyelids on the affected side after injections into the upper or middle divisions of the nerve; whilst after an injection into the third division the patient may complain of some stiffness in the masseter and pterygoid muscles. In a few cases temporary paresis of the facial muscles, lasting a few days, may occur after injection into the second division of the trigeminal. Kiliani has suggested that this may be due to the connection between the facial nerve and the sphenopalatine ganglion via the Vidian nerve.

To reach the foramen ovale, through which the third division of the trigeminal emerges from the skull, the needle is inserted through the cheek behind the last upper molar tooth at the lower border of the zygoma, at a point 2½ centimeters in front of the descending root of the zygoma, which can always be felt as a ridge close to the anterior border of the external auditory meatus. After piercing the skin, we push home the blunt stilette and proceed to penetrate the deep tissues, comprising the masseter and the posterior part of the temporal muscle. The needle is directed backward and slightly upward till it impinges on the skull at the external pterygoid plate. It is then pushed on, upward and backward along the bone, until it comes to the base of the pterygoid process. It is then pushed backward and slightly more upward until it enters the foramen ovale, at depth usually of about 4 centimeters from the zygoma. The stilette is now withdrawn, and the injection is slowly made. An occasional difficulty to which other observers have not referred, but which Stewart has met with, may occur in edentulous subjects, in whom the whole mandible is displaced upward, so that the upper part of the ramus and coronoid process are overlapped by the zygoma, thereby preventing the needle from reaching the deeper structures. This difficulty is easily overcome by making the patient open the mouth widely.

To reach the foramen rotundum, through which the second division emerges, is less difficult. Here our guide is the posterior border of the orbital process of the malar bone. We prolong this line downward to the lower border of the zygoma and insert our needle one-half centimeter posterior to this point. Pushing horizontally inward, and directing the point slightly upward, the foramen rotundum is reached in the pterygomaxillary fossa at a depth of about 5 centimeters from the zygoma, at a level with the inferior extremity of the nasal bones. The structures pierced by the needle are the anterior fibers of the masseter and the anterior edge of the temporal tendon, though this latter may be missed if the patient opens the mouth widely.

The supraorbital division, emerging through the sphenoidal fissure at the back of the orbit, is rather more difficult to reach with certainty, owing to the proximity of the optic nerve and of the third, fourth, and sixth nerves. Patrick and Hecht admit that the nerve is more often missed than reached by the needle, but it is not essential that the nerve trunk should actually be touched (though, of course, we should try and do so), because if the alcohol be injected in the immediate neighborhood of the nerve it diffuses into it. The needle is inserted just at the outer margin of the orbit, close within the frontomalar articulation, and is passed along the floor of the orbit to a depth of 3½ or 4 centimeters.

Although a single injection may suffice to relieve the pain, it is advisable to repeat

the injection after a couple of days, and until the last tract of pain disappears we repeat the injections at short intervals. In one of the writer's cases no fewer than seven injections were required before the patient was finally relieved.

THE SURGICAL ASPECTS OF HEMOPHILIA, WITH SPECIAL REFERENCE TO HEMARTHROSIS.

MILNER *(Canadian Practitioner and Review,* March, 1909) after a review of the still debatable etiology of hemophilia, notes that treatment by gelatin has proved a failure, whilst calcium salts are very uncertain. Of the many animal extracts, but two have proved useful, thyroid and adrenalin. Human and animal serums have given good results and have been used by several authorities, but their value appears to be chiefly in the sporadic form, not in the hereditary. Human serum is more efficacious than animal serum. Antidiphtheric serum may be employed. The dose employed intravenously is from 10 to 20 Cc. The effect is said to last for a month. Subcutaneously the dose is double. The author states that he has not employed serum since he has been able to deal with the bleeding more satisfactorily in simpler ways, though he states that if he were face to face with the necessity of an operation on a bleeder he would employ the intravenous injection of serum as described by Weil. What the general practitioner needs is an ever-ready remedy, one that may safely be left in the hands of the patient's family in case of emergency. Such a one we have in adrenalin.

In the treatment of cuts and abrasions, all one can do is carefully to observe the rules of aseptic surgery and apply adrenalin chloride from time to time, being careful not to bandage too firmly. A wound of the gums or mucous membrane needs very close attention. Here adrenalin is applied by a small compress and held firmly in place until the bleeding ceases, the process being repeated when the bleeding again commences. The adrenalin acts much better when the wound is first irrigated with hot water. The effect lasts for some hours.

In epistaxis, plugging the nares both anteriorly and posteriorly should be avoided on account of the danger of causing serious trouble in the frontal sinus. An efficient method of controlling the hemorrhage is to insert a small tampon saturated with adrenalin chloride, leaving it in place until the bleeding ceases, when it may be removed gently and one smeared with adrenalin ointment inserted. Should bleeding recur the adrenalin solution is again resorted to. The nares should be gently irrigated every day with some bland solution and the adrenalin ointment applied. This prevents dry crusts forming, which irritate the nose and tempt the patient to remove them with the finger, causing further hemorrhages.

Large hematomata of the soft parts are sometimes very painful and accompanied by inflammation. If it be a limb that is affected it should never be bandaged tightly, as the pressure on the muscles might, by depriving them of their blood supply, cause paralysis, as pointed out by Groves. It is quite possible for such a deformity to result without the injurious effect of bandage or splint. The proper treatment in such conditions is absolute rest and the application of hot boracic compresses, which relieve the pain and promote absorption.

A primary affection of the knee-joint may get well in from ten days to two weeks, with no other treatment than absolute rest, but secondary affections are much more serious. It is important to carefully inquire into the nature of the injury, whether caused by a direct trauma to some portion of the capsule, or by a wrench or hyperextension, in the latter case causing a hemorrhage probably from the synovial covering of the anterior crucial ligament. In hemorrhage into the capsule, caused by overextension, the pain is usually severe and involves the whole joint, and the tendency to flexion of the leg is greater than

in hemorrhage caused by a blow, the pain in this case being referred to the site of injury.

The pathological changes are practically the same in both cases, but are apparently more severe in the case of hyperextension, consequently there is a greater tendency to fixation.

Absolute rest is the first indication in the treatment, and this can only be obtained by placing the patient in bed and applying a splint. A very suitable splint is a posterior splint, with a lock-joint that may be adjusted to any angle desired. The leg is bandaged to this splint above and below the knee, leaving the knee exposed in order that local applications may be made, and also that the progress of the swelling may be watched. Great care should be exercised in applying the bandages that the circulation be not interfered with. The author has observed that in injuries due to wrenching or hyperextension the application of hot fomentations gives the greatest relief, while in the case of a bruise or blow when the site of injury could be determined the early application of ice has proved beneficial.

Just as soon as the swelling has reached its maximum, usually in four or five days, an extension apparatus should be applied. This should not be delayed, for two reasons: (1) on account of the tendency to ligamentous contraction, and (2) to prevent erosion of the joint surfaces. The extension gradually straightens the limb and gives great comfort to the patient, and should be kept on for two or three weeks after the disappearance of the fluid, when the weight may be gradually decreased and in another week entirely removed. A modified Thomas knee-splint is now applied, the joint being bandaged with flannel and a posterior bed splint worn at night in order to resist the tendency to flexion. The Thomas splint should be worn until the tenderness has disappeared, usually from six to twelve weeks, or even longer, according to the severity of the case. When the flannel bandage is removed an elastic knee support should be substituted and worn continuously.

In cases that have reached the stage of deformity with ankylosis, nothing, unfortunately, can be done. General tonic treatment, good food, and plenty of fresh air should, of course, not be neglected. If it be possible for the patient to live in a dry climate, it will be to his advantage.

Fortunately this disease is comparatively rare, at least in this country, as compared with Europe, but with the increase of population and immigration it will become much more common here in a very few years. There is only one remedy, and that is for the female members of hemophilic families, as well as those afflicted with the disease, not to marry. Fagge reports that in 1859 the female members of two hemophilic families in which the disease had existed for over a century resolved not to marry, and in 1879, twenty years later, there were no new cases. Afflicted families should be educated along these lines. They are directly concerned, and the cure is in their own hands.

PRESENT-DAY DIAGNOSIS IN THE TREATMENT OF SYPHILIS.

Under this title ABRAHAM *(Dublin Journal of Medical Science,* February, 1909), after calling attention to the difficulty incident to the positive diagnosis of chancre, notes that this has been resolved by the discovery of the causative agent of the disease and by Wassermann's formulation of a serum reaction.

Once a diagnosis has been formulated the question of treatment immediately forces itself upon one; and here two drugs, mercury and iodine, or one of the iodides, have stood the test of time, whilst a third, arsenic, has lately come into much prominence.

As to mercury, it is noted that fat patients, especially women, stand mercury remarkably well, whilst thin patients, otherwise healthy, very quickly, even with small doses of mercury, show poisonous symptoms. The weight is regarded as an important index as to the appropriate dose.

The teeth are put in perfect order, and all patients are required to gargle their mouths night and morning with a solution of alum 15 grains to the ounce. A common place for gingivitis to start is the base of the two central incisors. When this appears it can readily be checked by painting the inflamed area daily with copper sulphate, 10 grains to the ounce.

The author states that he has never seen any bad effect from the use of mercury in the presence of albuminuria.

Inunction treatment is especially commended and is the routine method in the children's wards. Unguentum hydrargyri, B. P., is used, an amount equal to the size of a hazelnut being spread on a binder, and applied daily. For adults it is applied as a collar, armlet, binder, or spica, and as the patients are not confined to bed the constant friction of movement, clothes, etc., rubs it in quite as well as massage.

When given by the mouth the preparation commonly used is pil. hydrarg., B. P., which contains 30 per cent of mercury. It should be prescribed fresh, uncoated, in a soft pill mass easily flattened by pressure between finger and thumb. For light patients, 2 grains a day are given; for heavy patients, 3 to 4 grains. The basic salicylate, which contains 60 per cent of mercury, is given in doses of one-fifth of a grain two or three times a day; it never causes diarrhea or griping and salivation is rare. It is moreover rapidly absorbed without disturbance of the gastric mucous membrane, but is lacking in curative properties.

As to intramuscular injections, the most suitable site is the gluteal region in the area above a line between the anterior and posterior superior iliac spines. Of the soluble preparations those most used have been sal alembroth, 10 minims of a 5-per-cent solution twice weekly; hydrargyri perchloridum, 1-32 grain in 10 minims every second day; hydrargyri succinimidum, 1-4 grain in 10 minims every second day.

These injections often produce great pain. Of the insoluble preparations calomel cream and gray oil are the ones commonly employed. Of these two preparations calomel cream is much the quicker in its action, and so is indicated in cases with extensive secondary ulceration. It is given in injections of 10 to 15 minims, containing ½ to ¾ grain of calomel, once a week. It is much less irritating than the gray oil. It is frequently followed by acute pain, which begins on the third day after injection, and because of this complication Fournier condemns it root and branch, stating that 90 per cent of his cases developed pain. Gray oil combined in such strength that 10 minims contain one grain of Hg. is given in the dosage of 5 to 10 minims per week. It is practically painless, but unless careful antiseptic precautions are taken is liable to be followed by painful induration going on to suppuration at the seat of puncture.

As to the iodides, these are chiefly useful in the tertiary stage, and potassium iodide, on account of its depressing effect, should be combined with ammonium carbonate.

Abraham stated that since adopting the suggestion of Ward iodide rashes have practically disappeared from the hospital. The patient is instructed to drink half a pint of hot water half an hour before taking iodides, following the drug with an equal quantity of hot water fifteen minutes afterward. In cases of mercurial stomatitis iodides should not be given, as thereby the system is flooded with a soluble mercurial; instead, magnesium sulphate is administered with frequent gargles of peroxide of hydrogen. In the occipital headaches so frequently complained of in the secondary period, iodides have a marvelously remedial effect.

When gummata have been cleared up under the action of iodides small doses of mercury should be continued for some months. As to arsenic, brilliant results from the injection of atoxyl have been recorded by numerous Continental physicians. On the other hand, fatalities, such as acute arsenical poisoning, blindness,

deafness, paraplegia, etc., have resulted from the use of atoxyl.

Abraham put some 20 cases on modern arsenic combinations without noting any beneficial effect.

RADIUM IN SURGERY.

TREVES (*British Medical Journal*, Feb. 6, 1909) in discussing the beneficial effects of radium observes that he speaks only of patients whom he has actually seen and personally examined. He states without hesitation that radium will cure every form of nevus; that it can rid the patient of a pigmented mole or of a hairy mole; and instances a number of striking cases, among others that of a girl with an angioma of the eyelid the size of a plum, which had been subjected to four operations, twice excised and twice treated with the actual cautery, with no benefit. It was perfectly cured by radium without trouble or discomfort to the individual.

Another case is mentioned of a young woman who had a nevus occupying almost the entire side of her face, who had been subjected to numerous operations with only imperfect success; under the influence of radium she was cured. In the case of a child suffering from a fibrous angioma the size of a hen's egg, situated in the substance of the arm, free from the skin which was uncolored and sound, the growth was entirely dispersed in four weeks. It is noted that there is a relation evident between the amount of radium used and the good it will accomplish. Treves observes that nothing is more curious in the use of radium than the manner in which it immediately cures, and apparently permanently cures, itching when placed over the surface of a piece of varnished silk. It can cause keloid to vanish whether this be sequent to a wound, to a tuberculous gland, or incident to acne.

As to rodent ulcer, this radium will cure —even rodent ulcers which have existed for many years, in which the tissues have become adherent to the bone, in which there is ulceration, and in which the Finsen light, the *x*-rays, the cataphoresis have all been tried and have all failed. Such cases, and there are many of them, may be cured by two sittings of radium lasting one hour each, the parts being finally left free from attachment to the deeper parts and the skin being soft and pliable. It will effect a cure where the *x*-ray cannot. Epithelioma of the tongue and epithelioma of the lip are also cured by radium. The same is true of commencing epithelioma on the inside of the mouth.

Radium has never been isolated. What we speak of as radium is the sulphate, the carbonate, or the bromide of radium. It appears as a whitish powder, and becomes later on a little yellow and then perhaps a faint brown. If radium were to sink to such a degree of cheapness that it became worth its weight in mere gold it would be exceedingly cheap. It is known that radium gives off heat, is phosphorescent, and that if it is dissolved in water it decomposes the same into its component parts; but the main property is that it is radioactive. Radioactivity means that the rays given off by radium have the power of penetrating solid and opaque substances, the power of affecting a photographic plate, the power of producing fluorescence, and the power of rendering air or other gas a conductor of electricity. These rays are of three kinds, known as the alpha-, beta-, and gamma-rays. The alpha-rays and the beta-rays are composed of material particles or ions, which carry a charge of electricity. That they are material is shown by the fact that the power of these rays is lost when they are passed through cotton-wool. The alpha-rays are composed of ions of fair size, having a mass equal to that of an atom of hydrogen. They carry a charge of positive electricity, they are deflected only by an intense magnetic field, they have little penetrating power, and a relatively slow velocity. The beta-rays, on the other hand, are composed of ions of smaller size, having a mass equal to only 1-1000 part of that of an atom of hydrogen. They carry a charge of negative electricity, are easily

deflected by a magnetic field, have great penetrating power, and move with a very high velocity. The gamma-rays are of a different type. They contain no ions; they carry no electric charge; they are consequently not deflected by a magnetic field; they have enormous penetrating power; and their velocity is about the velocity of light, with which they are comparable.

With regard to general qualities, the alpha-rays may exist alone. Polonium, a radioactive substance discovered by Madame Curie, contains only alpha-rays. Beta- and gamma-rays are never found disassociated.

The alpha-rays are capable of producing a very troublesome ulcer of the skin. They have greater ionizing power than the beta-rays, probably as 100 to 1. Taking the penetrating powers of the rays as 1, they are stopped by a sheet of mica. The beta-rays have a penetrating power of 100, and will pass through a centimeter of lead. The penetration of the gamma-rays, on the same basis, would be represented by 10,000 and will pass through one inch of steel. The alpha-, beta-, and gamma-rays have a very close resemblance to the rays which are met with in the vacuum tube used in the production of the *x*-rays.

The main feature in the application of radium is surface. It is ridiculous to attempt to apply radium as a broken-up bead in a glass tube without any notion of the amount of alpha- and beta- and gamma-rays you are using or how far the radiation extends. In applying radium surgically you want surface. A little radium spread over an even surface is much more powerful and can be much more exactly used than a bead of it in a glass tube. The power of any prepared plate of radium can be estimated by the electrometer with precision. The strength of radium is estimated by taking uranium as a unit. Radium is then represented by a radioactivity of 2,000,000.

The powdered radium, when placed on the disk or plate, is covered with a varnish, which is unaffected by boiling, by alcohol, or by the heat of a sterilizer. Radium can be mounted on gum elastic, or it can be spread on silk or cloth, or on anything which can be varnished. It must be ordered by a definite prescription. For the individual case a plate of a certain diameter is ordered, and the proportion of alpha-, beta-, and gamma-rays required will be stated in the prescription. The alpha-rays may have to be cut off. This can be done by a certain thickness of aluminum, a very thin plate. The closer the radium is held the more intense its effects.

The power of inducing radioactivity in other substances is due to something which comes from the radium called the emanation. A penny made radioactive if scrubbed with emery powder loses this activity, but the emery powder has become radioactive. Wash the penny with nitric acid and it loses its radioactivity; evaporate the nitric acid, and the residue left is radioactive. There comes off of radium an emanation which has the power of rendering any body it touches radioactive. There is no method of inducing radioactivity except by the emanation, and it is evident that this emanation leaves on any surface it touches an active deposit—a deposit which can be removed.

The selective action of radium is one of the most astonishing things about it, as illustrated by the manner in which it picks out vascular tissue for destruction.

THE TREATMENT OF PUERPERAL INFECTION BY FIXATION ABSCESSES.

Boissard (*L'Obstetrique*, October, 1908) criticizes, and in general supports, the arguments of Fabre, of Lyons, on the treatment of puerperal infection by means of injections of turpentine to produce an abscess. The pus produced in these abscesses is sterile, as shown by cultures, and Boissard has failed to find microbes in film preparations. The turpentine produces a local leucocytosis, a local "white-bloodletting," and if this reaction does not follow the injection, the prognosis is bad. Boissard advises that this treatment should be adopted in all cases of puerperal infection which

fail to yield rapidly to ordinary methods; at the same time ordinary methods should be kept up, and the author is careful to explain that, while urging the adoption of this treatment, he admits that he does not exclude the effect of disinfection of the uterus, and so on, from his general results. Of thirteen patients treated four died. In regard to technique, he recommends an injection at one point of from 3 to 5 cubic centimeters in a single dose, usually into the outer aspect of the front of the thigh or the anterior axillary line. The treatment is painful, but there is no general reaction; locally an abscess is usually formed in about six days, and as the pus is sterile it need not be opened till two or three days later. The cavity contains a large quantity of sloughy débris, which can be washed out with water or hydrogen peroxide.—*Glasgow Medical Journal,* February, 1909.

IODINE IN SURGICAL TUBERCULOUS DISEASE.

TATCHELL (*British Medical Journal,* Feb. 13, 1909) states that one of the common diseases with which we are confronted in China (as probably also in other countries) is tuberculous disease of joints, bones, glands, and skin.

Last summer the writer had a special number of tuberculous joint cases which either occupied beds or attended the outpatient department for change of dressing, and it occurred to him to try iodine liniment.

The first case which was seriously treated by this method was that of a lad with tuberculous disease of the right elbow. As usual, a native doctor had acupunctured the swollen member. Having a poisoned hand the writer asked a colleague to operate. He excised the joint and removed every vestige of disease. Every possible care and precaution was exercised to secure a good result. After a few weeks, with the usual treatment of iodoform dressings, the condition of the elbow was, as the experience of similar cases had led them to expect it would be, that it was healed to a certain degree, but with several sinuses persisting. They again put the lad under chloroform and thoroughly scraped the sinuses, from which pus was freely discharging. Then they thoroughly swabbed the sinuses with iodine liniment; no drainage was put in, but after dressing with gauze and wool the arm was replaced upon an angular splint. Two days afterward they removed the dressings, and to their surprise there was not a particle of discharge. Every day after they swabbed the sinuses with iodine liniment, and they healed as though they had been touched with a magic wand. Before the lad left the hospital he had secured splendid movement. He could write with a Chinese pen and manipulate his chopsticks with celerity.

The author's experience, after six months' trial, is that although iodine liniment acts well upon ulcers and sinuses of a mixed infection, the results are not quite so rapid or satisfactory as is its action upon tuberculous disease.

The modus operandi is as follows: Operate and scrape as usual. Then thoroughly swab the cavity with iodine liniment (B. P.). A piece of cotton-wool twisted around the end of a probe forms a good swab, and can be graduated according to the size of the sinus. The liniment is applied every day. The application does not cause pain, except a momentary sensation, when applied to some surfaces; neither does it destroy tissues, as does pure carbolic acid. Granulations do not become excessive. At the first application a thin piece of gauze is packed in lightly, but never at subsequent dressings. Gauze plugs and strips for drainage have undoubtedly been responsible for many chronic sinuses. From the first there is given internally a mixture containing syrup. ferri iod. one drachm, and potassium iodide five grains, thrice a day.

In the case of huge phagedenic ulcers, which form so large a part of clinics in China, these are first scraped or fomented, so as to get access to the base of the ulcer. Then the iodine liniment is applied daily.

A case which involved the entire dorsum of a patient's foot and toes, exposing the tendons and bones, was scraped, and iodine liniment was used, with the most successful results.

AN OPERATION FOR PARALYTIC CALCANEO-CAVUS.

JONES *(Liverpool Medico-Chirurgical Journal,* January, 1909) notes that paralytic calcaneo-cavus is of all others the most intractable to treat. It may involve complete, or only partial, paralysis of the calf muscles, and be accompanied by paralysis of some or all the other muscle groups. The heel is depressed, and often continues in the line of the tibia, the posterior aspect of the os calcis becoming the inferior, while the hollow foot is dependent upon the depression of its anterior part at the mid-tarsal joint. As the toe drops sometimes below the level of the heel, the general surgeon often commits the serious blunder of dividing the tendo Achillis, and so cuts his only ally adrift.

Mechanical treatment is wofully depressing, and the most serious attempt from the operative side has been made by Royal Whitman.

Recognizing that from the upright position of the heel the body weight is erroneously deflected, he makes a long external incision from behind and above the external malleolus, below its extremity, and terminating at the end of the astragalus. The peronei tendons are divided well forward and deflected; the joint is opened and the foot displaced inward. The astragalus is then enucleated. Sections of bone are removed from the outer surface of the os calcis and cuboid. On the inner side the sustentaculum tali is removed and the calcaneo-navicular ligament separated. The cartilage is removed from both malleoli. The foot is then displaced backward as far as possible so that the external malleolus may cover the calcaneo-cuboid juncture, while the inner is forced into the depression behind the scaphoid. If the peronei are active they are fixed to reënforce the Achillis tendon. The foot is then fixed in plaster in the attitude of equinus.

The operation the author suggests as being both simple and effective is the following, but should not be performed in children below the age of eight:

(*a*) Calcaneo-cavus where the calf paralysis is complete. The operation is to be done in two stages, four weeks intervening.

Divide the plantar fascia if contracted and wrench with hand or instrument.

Make an incision down to the bone about three inches in length on the inner side of the foot, the center of the incision being opposite the angle of convexity.

With periosteum elevator separate the soft structures from the tarsus above and below from the inner to the outer side.

Remove a transtarsal V-shaped section of bone. If there be valgoid deformity let the section be wider on the inner than on the outer side. Suture, and obliterate the cavus deformity by extending the foot, which is now bandaged to the tibia, the calcanean deformity being apparently much increased.

Stage II (four weeks later): Make a longitudinal incision at back of heel, the center being opposite the ankle-joint. Open the joint and take a wedge from the astragalus, sufficiently large to be accurately obliterated when the foot is brought to right angles. Denude tibia and fibula of cartilage.

The foot should be brought to right angles and fixed immovably until union is complete.

(*b*) Calcaneo-cavus where some power remains in the calf muscle.

Stage I, as before.

Stage II: Shorten the capsule. Shorten the tendo Achillis; remove a skin flap, and after three weeks massage the gastrocnemius. In this case it is not advisable to remove bone.

In older subjects it may be necessary when removing a wedge to incise the outside as well as the inside of the foot.

For some weeks after walking has commenced the foot should be protected against strain.

REVIEWS.

LEHRBUCH DER INTERNEN MEDIZIN. William Osler, Koeniglicher Professor Der Medizin an der Universitaet Oxford. Aus dem Englischen Uebersetzt und fuer Deutsche Verhaeltnisse ergaentzt und bearbeitet von Priv.-Dozent Dr. Edmund Hoke. Mit einem Vorwort von Obersanitaetsrat und Hofrat Professor Dr. R. v. Jaksch, Prag. 38 Abbildungen. Urban und Schwarzenberg, 1909.

Professor Jaksch regards Dr. Osler's book as an excellent text-book on practice because it is based on an enormous personal experience and represents the systematic record of one man of large observation. Dr. Hoke has added much valuable material from the large clinic at Prag, and being himself an acknowledged expert in bacteriology has enriched the work with matter of great value.

Jaksch writes truthfully that a careful reading of this great work will demonstrate that it presents in clear and brief review nearly every disease, including tropical and children's ailments.

Osler's work is so well known in this country that it remains for us to refer only to the well-deserved compliment which this translation implies, especially since a French translation appeared last summer also.

The translator calls attention to some statistics on the ice treatment of sunstroke, which he appears to have obtained from an American work on hydrotherapy (German translation), in which the author inveighs against the neglect of Osler and other text-book writers to utilize for instruction of their readers the statistics of the New York hospitals on an epidemic of sunstroke in 1896. These statistics were utilized by the American hydrotherapeutist for the demonstration of the fatality of the prevalent antithermic treatment of sunstroke. Osler states that "Darrach's mortality of 12 in 31 cases represents an excellent result." That this fatalistic prognosis is unwarranted and that it is traceable to the irrationality of the fatal antithermic ice treatment the statistics of the New York hospitals in 1896 demonstrate quite clearly. "Ice baths" to reduce temperature were followed by a mortality of 33.33 per cent. Affusions with cold water, stopped when the temperature reached 103° F. (in 197 hyperpyrexial cases), were followed by a mortality of only 6 per cent. It is singular, to say the least, that not a single text-book on practice which has appeared since the publication of these largest and most remarkable statistics has referred to them, and that so practical a work as the one under consideration has passed through several editions, reiterating in each the insignificant statistics published forty years ago. To detect and to call attention to this fatal therapeutic error seems to have required a foreign eye. The reviewer has dwelt upon it on account of its importance and because the translator has erroneously credited the American author on hydrotherapy with a reduction of the mortality to 11.5 per cent.

Dr. Hoke has added an epitome of the most important poisons and their management when imbibed, a chapter which adapts the work more perfectly to the student of medicine.

S. B.

ANATOMIE UND MECHANISMUS DER SKOLIOSE. By Carl Nicoladoni. Published by Urban & Schwarzenberg, Berlin, 1909.

This small, bound volume of 50 pages, with a separable volume of 54 illustrations, represents a large amount of personal research and experimental study of scoliosis by its author. The significant illustrations, which add much to the value of the work, were chiefly produced from photographs of specimens prepared by the author, and from his drawings. This work, which failed to appear before the death of Dr. Carl Nicoladoni in 1902, is now published by Henriette Nicoladoni.

The subject of scoliosis is presented in minute detail. The various forms of curvature, primary and secondary, with the consequent alteration of the structural elements entering into the conformation of the chest and abdominal walls, are graphically described. The author min-

utely narrates the changes of the internal organs in a case of high-grade scoliosis, indicating their altered position, such as the kidney, liver, stomach, heart, intestines, etc.; describing their altered function, such as that following the compression of the lung on the convex side of the curve, the compression of the ureter between the eleventh and twelfth ribs and the vertebræ, compression of the kidney, etc.; and calls attention to the resultant pathological changes of the organs thus affected.

A detailed analysis of the changes that take place in the form and structure of the vertebræ, ribs, sternum, etc., is given, describing the various types of deformed vertebræ, from that which is least affected to the characteristic torsion vertebræ, and with the aid of his illustrations the author explains the histological changes that take place in the structure of the vertebræ, processes, etc., on account of the altered lines of force imposed.

Careful attention is given to the condition of altered functions and working forces of the ligaments of the spine, the altered relative position of the attachments of the diaphragm and its consequently hampered function.

The author especially describes the conditions found in the scoliosis of childhood. In the concluding chapter the views of various authorities as to the causative factors of scoliosis are given and discussed. The therapeutic value of the book is *nil*, because that is not its mission, but from a pathological point of view, and as a graphic picture of the mechanisms of scoliosis, the work is of great interest and value.

W. J. M.

SURGICAL DISEASES OF CHILDREN. By Samuel W. Kelley, M.D. Illustrated. E. B. Treat & Company, New York, 1909.

This, the first text-book on this subject written by an American author, and covering surgical affections as they are manifested in children, begins with a chapter on Examination, Case Taking, and General Surgical Subjects. The second chapter is devoted to General Surgical Pathology of the Developing Period, Malformations, Giantism, Acromegaly, Achondroplasia, Tumors in Infancy and Childhood, and Retention Cysts. Thereafter follow Certain Constitutional Diseases such as Hemophilia, Rachitis or Rickets, Infantile Scorbutus. Next come Various Infections and their Effects, and Non-infectious Gangrene; Burns and Scalds. The Muscles, Tendons, Fasciæ, Bursæ, and Cellular Tissues are covered in one brief chapter. About a similar space is devoted to Rickety Deformities.

Diseases of Periosteum, Bones, and Joints are classified as non-tubercular and tubercular and discussed from this standpoint.

Fractures, Epiphyseal Separations, and Congenital and Acquired Luxations are satisfactorily considered.

The last half of the book is devoted to Regional Surgery.

This work has evidently been prepared by one largely experienced in the surgical affections of children, and who possesses the ability to embody the practical results of this experience in a text which represents the generally accepted views of the day.

CLINICAL DIAGNOSIS AND TREATMENT OF DISORDERS OF THE BLADDER, WITH TECHNIQUE OF CYSTOSCOPY. By Follen Cabot, M.D. Illustrated. E. B. Treat & Company, New York.

This book, which the author states is largely a record of personal experience and not an attempt to cover the whole subject under discussion, begins with history taking and physical examination, together with some facts in regard to the prevalence of syphilis and gonorrhea in the innocent and model leaflets containing instructions to those having gonorrhea or clap, instructions to those suffering from syphilis, and a few paragraphs upon "The Dangers of Ignorance."

The second chapter is devoted to the Anatomy of the Kidney, Ureters, Prostate, and Urethra. Thereafter follow urine analysis, methods of examining the bladder, separation of the urine, technique of cystoscopy with indications and contraindica-

tions, causes of cystitis and senile prostatic hypertrophy.

There seems to be in this book no departure from accepted teachings.

BLOOD EXAMINATION IN SURGICAL DIAGNOSIS. By Ira S. Wile, M.S., M.D. Surgery Publishing Company, New York, 1908.

Wile in his preface holds that as there is in a sense a surgical pathology, there may also be said to be a surgical hematology, and the purpose of this brochure is briefly to cover the latter topic.

The first chapter is devoted to equipment and estimation of hemoglobin, the specific gravity test being accorded a place which its simplicity justifies.

The next chapter is devoted to the red corpuscles and the leucocytes. Thereafter follow descriptions of the types of leucocytes, iodophilia, and the differential leucocyte count. Iodophilia is accorded an important place in differential diagnosis. The test for coagulation, cryoscopy, examination of fresh blood, anemias and their classification, interpretation of leucocyte counts and of differential counts of blood in obstetrical and gynecological conditions are some of the topics briefly but very thoroughly discussed. This book represents an excellent condensation of accepted views concerning the demonstrable effects of both medical and surgical diseases upon the constituents of the blood. The facts are given without exaggeration, and the work is likely to prove valuable both to the practitioner and the student.

SEVEN HUNDRED SURGICAL SUGGESTIONS. By Walter M. Brickner, B.S., M.D., Eli Moschcowitz, A.B., M.D., and Harold M. Hays, M.A., M.D. Third Series. Surgery Publishing Company, New York, 1909.

The repeated calls for new editions of this little work prove its value. The suggestions as a rule are admirable ones and such as would not occur even to a specialist. Thus it is noted on page 140 that "a spoon-shaped potato cutter may be used in an emergency as a wound curette."

Even hasty perusal of practically any page of this book is likely to prove of service.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE.

The Mansion House, situated in the most important part of the city, is and has been for years employed for many and various purposes. It has been the dining hall of kings and emperors, a place for the discussion of questions of universal or national importance, and has also been employed as a meeting-place for those who are wishing to organize charitable relief both at home and abroad. The Lord Mayors are most kind and hospitable in this respect. Last month it was lent for a meeting of the British Homeopathic Association, in order to establish a national homeopathic fund. The Lord Mayor opened the proceedings, and Lord Cawdor proposed the important resolution of the meeting, viz., that a national fund be raised to support homeopathic institutions in the United Kingdom. These included hospitals, cottage hospitals, dispensaries, institutions for research, convalescent homes, and sanatoria, in all of which homeopathy was to be the leading feature. He said that there were only twelve such institutions in England, and none in Scotland or Ireland. The motion was unanimously adopted, and donations amounting to £7590 were announced. This was considered fairly satisfactory for the occasion.

Amongst those who are appealing for funds to endow the research laboratories we find the authorities of the new University of Cardiff. In their appeal the encourage-

ment of research is alluded to as a national duty. This point of view has not been brought as much to the front in the past as it might have been. There are numerous instances to show how this country has lost because the funds which were necessary to carry on research have not been forthcoming, and it is hoped that this appeal will be successful. Cardiff has only been established as a university in the past fifteen years, and it is situated in an area which is sorely in need of a teaching center. Already several brilliant men have come from its walls. Sir Izambard Owen was largely responsible for the institution of this university, and though he is now occupying an important position in the north as Principal of the Armstrong College at Newcastle-on-Tyne, he still retains the position of Deputy Chancellor of the University of Wales.

The question of the medical treatment of schoolchildren is still prominently before the Education Committee of the London County Council, and as such is also being brought to the notice of the public and naturally to that of the medical profession. Latterly the most interesting problem relates to the position of the public hospitals and dispensaries. For the treatment of cases of ringworm the *x*-rays are recommended as being the most expeditious and therefore the most desirable as a time-saver. The report of the last subcommittee advocates the establishment of a central institution for this purpose, and that power to compel the attendance of infected children be granted to the authorities. Open-air schools are also advised for the after-treatment of tuberculous and other debilitated children. These children are usually discharged from the hospitals before they can really be said to be cured, and the permanency of their cure depends very largely on the care with which the after-treatment is carried out. The real difficulty lies in coping with the defective teeth of the children. It has been conclusively shown that at least 80 per cent of the schoolchildren require attention in this direction, and probably an hour to each child would not be above the average of treatment. In London there are not nearly enough hospitals where conservative treatment can be given, and the provision for this defect is the most urgent. It is suggested that the hospitals in general should be subsidized by the County Council. This is a very serious question and means giving preference to the patients sent up by the L. C. C., and this fact will probably deter the hospitals from accepting any such offers. The Prime Minister has stated that no increase of the present grant is to be looked for, so that an increase of expenditure in this direction will have to be provided for out of the rates, and these are, in the opinion of most of the ratepayers, far too high as it is. It looks as though the Education Committee will have to establish their own centers and a special medical service in order to cope with this question.

Another important report is that issued by the Central Midwives' Board. This board was formed in the year 1902, and the present report deals with the work done from its constitution up till March, 1908. The board has no authority to undertake the training of midwives, but a large part of the duties are concerned with the applications of various hospitals and institutions for recognition as teaching centers, the applications of medical practitioners to be recognized as teachers, and of certified midwives to supervise the practical work of the pupils. Also the board arranges for the examination of those who have undergone the prescribed course and the granting of certificates to the successful. Six examinations are held annually in London, and three in the provinces. At the date of the report there were 25,600 odd names on the roll, but it is a strange fact that not 60 per cent of these had any intention of practicing as midwives. It is getting to be a recognized fact that every good nurse shall hold this diploma. To show how the work has been taken up it is only necessary to quote the statement that there are 71 recognized schools for training, and 88 teachers and 92 midwives who are approved for the purpose of teaching practical work. The board also has to look into reported cases of neglect or malpractice on the part of the midwives.

The act is working well, and the main defect from the medical point of view is that there is no provision made for the recovery of fees for the medical man who is summoned in cases of emergency or difficulty. With reference to this point, we see that a resolution was brought forward at a recent meeting of the Staines Board of Guardians, and carried unanimously, that "in cases of instrumental or abnormal labor this board, having ascertained on inquiry that the midwife acted in a bona-fide manner in sending for a medical man other than the poor-law medical officer, pay the former a fee not exceeding one guinea."

The retirement of Sir Felix Semon from practice, which is announced to date from this coming June, has been made the occasion of raising by subscription money to present him with a testimonial. The organizers of this movement are almost entirely members of the Laryngological Society, and Prof. Sinclair Thompson has consented to act as treasurer. No doubt the rest of the profession will help to make the testimonial a success.

It is with great regret that we have to record the death of the editor of the *Lancet*, Dr. T. Wakley, which occurred last month. He began his connection with the editorship of the *Lancet* as early as 1887 in the capacity of joint-editor. Dr. Wakley was a retiring man and known personally to only a few of his professional brethren, but in his official capacity he wielded considerable power and has ably steered the *Lancet* through stormy times to its present important position. Dr. Squire Sprigge will succeed to the editorial chair. The new editor is best known for his work "Medicine and the Public."

We have also to record the death of Dr. Peter Horrocks, who was until recently Senior Gynecologist to Guy's Hospital. Another gynecologist has also passed away in the course of the last few days—Dr. Crawford Hayes. Dr. Hayes retired from the chair of Gynecology at King's College Hospital a few years ago, and had been living in retirement in the country.

In the field of sport the only item to record is the fate of the Interhospital football cup, which, as was generally expected, went to Guy's Hospital.

INJECTION FOR SEAT-WORMS.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: I have found naphthalin a very effective remedy in the treatment of threadworms. I give it in doses of 6 grains[1] four times a day for two days, and repeat in a week.

There is no need to use those troublesome and often useless enemas recommended in the text-books. I have cured some cases of four years' standing in which all other remedies failed.

I read your journal eagerly every month; it is just the one for the general practitioner.

Yours faithfully,

T. FOLEY.

Ardmore, Youghal, County Cork, Ireland.

[1] These doses are much larger than those usually given to adults.—ED.